

# AEROS NANOLIGHT TRIKE

# ANT

## OWNER /SERVICE MANUAL



*Wing: Combat-T, Discus-T, Fox-T, Fox-13TL*

*Engine: Cors-Air JPX M25, Polini Thor 250*

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# Introduction

Thank you for purchasing the Aeros ANT nanolight trike.

Please read and be sure you thoroughly understand this manual before operating your ANT trike. Be sure you are thoroughly familiar with the ultralight and the contents of this manual before initial operation.

Regular maintenance is required to keep your ultralight in a safe condition. Maintenance requirements are outlined in the Wing maintenance and Trike maintenance sections of this Manual. Please reference these sections to ensure your ultralight is maintained correctly.

The operating procedures outlined in this Manual are the result of Aeros knowledge and experience gained since 1991.

Aeros data packages will be revised from time to time. It is therefore important that you visit us regularly at <http://www.aeros.com.ua>

In case of any doubts or questions contact your local dealers or Aeros.

We wish you a safe and enjoyable flying career.

Aeros Ltd.

## Symbols Abbreviations and Terminology

In this Manual:

Landing Approach Speed means the airspeed that allows control in turbulence, wind gradient or sudden engine failure during landing.

Maneuvering Speed means the indicated airspeed above which the pilot may not make full or abrupt control movements.

Stall Speed means the indicated airspeed at which an uncontrolled downward pitching motion of the ultralight occurs or the forward control bar limit is reached.

Take Off Safety Speed means the airspeed that allows control in turbulence, wind gradient or sudden engine failure during the climb following take-off.

Trim Speed means the indicated airspeed at which the ultralight remains in a stabilized condition without pilot input.

Trike in this Manual means fuselage of the weight shift controlled powered aircraft with a power plant and a tricycle undercarriage.

Ultralight in this Manual means weight shift controlled powered aircraft with tricycle base (tri) and a flex wing.

VNE means the indicated airspeed that the ultralight is never to exceed.

## 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 ULTRALIGHT OR ITS INSTALLED EQUIPMENT

### NOTE

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

# 1. GENERAL INFORMATION

## 1.1 Trike

The ANT trike is a one seat weight shift controlled ultralight. It is fully complies with the concept of maximum portability – it can be folded up to fit in the back of many cars. The wing is light and once packed can easily be carried on car roof racks. There is a choice of JPX M25 (2 stroke, 25 hp) or Polini Thor 250 (2 stroke, 36 hp) engines to power the trike. The base is attached to the wing by way of a hang bracket which allows the free movement of the trike in pitch and roll by which control is affected.

The trike is equipped with adjustable pedals to allow for various size pilots.

The ANT has manually retractable landing gear. After take-off the rear wheels can be retracted to aid in drag reduction. The great advantage of retractable landing gear is transportation – the trike can be easily fitted inside of ordinary car.

NOTE: The sizes of main upper pylons and front brace tubes differ for Fox T, Fox-13TL, Discus T, Combat T wings.

ANT	
Empty weight w/o engine, kg	23
Empty weight with JPX M25 (2 str., 25 hp) engine (without rescue system), kg	46.5
Empty weight with Polini Thor 250 LS engine (without rescue system), kg	51
Fuel tank volume, l	18
Starter type	Electric
Dimensions (folded, no prop, no engine), m	L=1.35, W=0.55, H=0.95

Trike type	ANT Compact				
Wing type	Combat 12T	Discus 15T	Fox 16T	Fox 13TL	Combat 12T
Engine type	JPX Corsair M25Y (2-stroke)				Polini Thor 250 LS (2-stroke)
Power, hp	25				36
Propeller type	2-blade Helix H30F				3-blade Helix H40F
Empty weight (incl. rescue system), kg	91	87	80	89	99
Empty weight without wing (incl. rescue system), kg	52				56.5
Max.pilot weight with 10 l/2,6gal of fuel, kg	up to 112	up to 111	up to 109	Up to 114	up to 107.5
Max take-off weight, kg	210	205	196	210	210
Standard fuel tank, l/gal	18/4,75				
Max. airspeed, km/h mph	95/60	90/56	70/44	85/53	95/60
Min. airspeed, km/h mph	37/23	35/22	35/22	37/23	37/23
Fuel consumption at cruise speed, l/hour / gal/h	3.5/0,92	4/1,06	4.5/1,19	4.5/1,19	5/1,32
Load factors, g	4g/-2g				
Climb rate, m/s/ft/min	2.5/492	2.5/492	2.2/433	2.4/472	3.2/630

## 1.2 Wing

There is a choice of Fox T, Fox 13TL, Discus T or Combat T wings for the ANT.

### WARNING

WE DO NOT RESPONSIBLE FOR ANY DISCREPANCIES ARISING FROM THE CUSTOMER'S OWN INSTALLATION OF OTHER BRANDS AND TYPES OF WINGS.

Discus T has been specially designed for nanolight trikes, with a Discus hang glider used as a base. It comes in two sizes: Discus 14T and Discus 15T. Handling the Discus T in the air is as easy as handling a conventional hang glider.

Fox T is another wing for nanolight trikes for those who want to feel the simplicity and real pleasure of bird-like flying. It has been developed from our beginner glider Fox and has been reinforced and adapted for flying with nanolight trikes.

Fox 13TL is a kingpostless wing that combines performance of a Discus T with simplicity of construction and quickness of rigging and de-rigging of a Fox T. Due to its unique design the nanolight trike with a Combat T wing will allow you the whole aircraft storage with the wing only partially de-rigged and folded in but still attached to the trike. This allows storing the trike with the wing on it in a really limited space in a hangar or even in a garage. Setting the wing that already attached to the trike up for flight takes about five minutes.

Combat T is another step higher in nanolight technology. It is designed for those who want to extend their abilities of flying faster and farther. Due to its unique design the nanolight trike with a Combat T wing will allow you the whole aircraft storage with the wing only partially de-rigged and folded in but still attached to the trike.

Wing type	Combat T	Discus 14T	Discus 15T	Fox 13TL	Fox T
Sail area, sq.m. (sq.ft.)	12.8 (138)	13.7 (147.5)	14.7 (158)	13 (140)	16.2 (174)
Wing span, m (ft)	10.0(32.7)	10.0 (32.8)	10.3(33.8)	8.65 (28.35)	9.6 (31.4)
Aspect ratio	7.8	7.3	7.2	5.75	5.7
Nose angle, deg	130	126	126	121	120
Stall speed, kmph (mph)*	37 (23)	35 (22)	35 (22)	37(23)	35 (22)
Speed of max glide angle, kmph* (mph)	48 (30)	45 (28)	45 (28)	48(30)	43 (27)
Range of operating overloads	+4/-2	+4/-2	+4/-2	+4/-2	+4/-2
Maximum payload, kg (lb)	178 (392)	170 (375)	170 (375)	200 (441)	168 (370)
Weight without bag, kg (lb)	39 (86)	33 (73)	35 (77)	35 (77)	28 (61.5)

\* - with maximum payload

#### NOTE

For full details of the wings, refer to the relevant wing manuals.

#### WARNING

DO NOT USE Fox T, Fox-13TL, Discus T, Combat T WINGS FOR FLYING WITHOUT A TRIKE.

### 1.3 Ultralight

The ANT in combination with any of above mentioned wing has proven to be an excellent combination to feel simplicity and real pleasure of bird-like flying.

The entire aircraft can be de-rigged and stored at home with minimum time and effort without any tools required.

## 2. LIMITATIONS

### 2.1 General

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

### 2.2 Airspeed Limitations

SPEED	km/h	mph	COMMENTS
Vne (never exceed speed)	90	56	Do not exceed this speed in any operation
Va (maximum maneuvering speed)	65	44	Do not make full or abrupt control movements above this speed

## 2.3 Power Plant Limitations

### 2.3.1 Engine

The ANT trike may be equipped with either JPX M25 (2 stroke, 25 hp) air cooled engine with electric starter, or with Polini Thor 250 LS (2-stroke) liquid cooled engine with electric starter.

The trike can be equipped with other engines with similar characteristics.

ENGINE PERFORMANCE & LIMITATIONS		
Engine Type	JPX M25	Polini Thor 250
Take off RPM (Max 5 minutes), rpm	7500-7900	7500
Maximum RPM (continuous), rpm	6500	7000
Engine head temperature minimum, °C	-	55
Engine head temperature maximum, °C	-	90
Take off power, hp	25	36

### WARNING:

These are non-certified aircraft engines, the possibility of engine failure exists at all time. Do not operate these engines over densely populated areas. Do not operate these engines over terrain where a safe, power off landing cannot be performed.

### 2.3.2 Fuel

The following fuels can be used.

#### JPX M25:

Fuel mixture of premium petrol 95-99 (Ron) Octane unleaded or AVGAS 100LL and oil at 2.5%.

Synthetic top-quality oil for 2-strokes engines.

#### Polini Thor 250:

Fuel mixture of premium petrol 95-99 (Ron) Octane unleaded or AVGAS 100LL and oil at 2%.

Synthetic top-quality oil for 2-strokes engines.

## 2.4 Weight

Maximum take-off weight *, kg (lb)	196-210 (432-463)
Empty weight (with Discus 15T wing and JPX engine), kg (lb)	81.5 (180)
Empty weight (with Discus 15T wing and rescue system), kg (lb)	87 (192)
Permissible pilot weight range, kg (lb)*	55-111 (121-245)

\*-depending on the type of wing and engine, with full fuel tank.

## 2.5 Operational Limits

### 2.5.1 Centre of Gravity limits

Centre of gravity limits are not critical on the trike of a flex wing ultralight. Having the trike unit attached to the wing with a hang bracket, variations of cockpit loading and fuel loading cannot influence the ultralight's balance. The ANT is therefore not critical in regards to centre of gravity although the distribution of load in the trike has an affect on the in-flight attitude of the ultralight.

### 2.5.2 Maneuvering Limits

All aerobatic maneuvers including spinning are prohibited.

Aerobatic maneuvers including stalls, stalled spiral descents and negative G maneuvers are not permitted. These maneuvers put the ultralight outside the pilot control and put both the ultralight and its occupant in extreme danger.

Do not pitch nose up or nose down more than 45 degrees from the horizontal.

Do not make high speed abrupt turns.

### 2.5.3 Bank Angle

Do not exceed 60 degrees of bank angle. In roll there is no stop for the control movement. When performing the pre flight procedure check that the wing moves freely by lowering each wing to within 10 cm of the ground (on ground level).

### 2.5.4 Flight Load Factor Limits

Max positive maneuvering load factor: 4.0 G.

Negative load factors prohibited.

Load factors below 1.0 G to be avoided.

### 2.5.5 Operation Limits

The ultralight is only to be flown under visual flight rules (VFR), and the minimum equipment required to operate under VFR conditions are an Air speed indicator, Altimeter and instruments required by the engine manufacturer.

Additional equipment may be required for some foreign operations.

### 2.5.6 Fuel Limitations

Tank capacity 18 liters.

### 2.5.7 Maximum Occupant Seating Limits

One occupant maximum allowed.

### 2.5.8 Pilot Weight

The ultralight must only be flown solo. Minimum pilot weight shall not be less than 55 kg. Maximum pilot weight shall not exceed 108 kg (with full fuel tank). Maximum pilot weight depends on the wing type installed on the trike and engine.

### 2.5.9 Other Limitations

Maximum Cross Wind - 2m/s

Maximum Wind Strength - 8m/s

Maximum Ambient Operating Temperature + 35 ...-10 deg C

No person who is untrained or unqualified in weight shift controlled flight or, who is unfamiliar with the wing and trike combination, should ever attempt to pilot the ultralight.

The effect of light rain on the wing can increase the stall speed. It is extremely important to maintain speeds in excess of the take off and landing safety speeds when the wing is wet. If the ultralight has been left out in the rain or heavy dew it is necessary to wipe the wing down prior to take off.

Continued operation in heavy rain is not recommended due to the abrasive effect of raindrops on the propeller.

## CAUTION

MOISTURE ON THE WING CAN INCREASE STALL SPEED AND SHOULD BE REMOVED PRIOR TO TAKE OFF.

## 3. ULTRALIGHT & SYSTEMS DESCRIPTION

### 3.1 General

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

Information on the ultralight flight controls is detailed in this section, but it is mandatory that you receive professional training prior to any solo flight.

### 3.2 Ground / Flight Control

Ground / flight Controls are as follows:

- Push left pedal = Taxi steering right
- Push left toe = Brakes on

- Ignition switch forward = Switch on
- Key position right = on
- Control bar move left = Right turn
- Control bar move right = Left turn
- Control bar push out = Pitch up
- Push right toe = Throttle open
- Hand throttle forward = Throttle open

### 3.3. Retractable landing gear

The ANT trike is equipped with manually retractable landing gear.

Grate advantage of retractable landing gear is transportation – the disassembled trike with landing gear retracted can be easily fitted in its transportation bag inside of ordinary car.

The rear wheels can also be retracted to aid in drag reduction.

The retractable landing gear is simple and easy to operate.

To retract the landing gear on the ground (in case the ultralight is dismantled for storage, the wing and the engine must be removed from the trike) do the following. Lift the rear of the trike up (best done with an assistant), open the lock (*Fig. 1*) and fold the landing gear struts forward one by one. Pivot the struts forward until they rest in the retracted position on the locks (*Fig. 2*).



*Figure 1*



*Figure 2*

The dismantled for storage trike with the landing gear retracted can easily fit into the boot or cabin of most cars.

To open the landing gear, pull the handle to open the landing gear lock (*Fig. 3*). Manually position the landing gear struts one after the other into the landing position and lock them in the opened position with the lock lever (*Fig. 4*). Be careful not to injure your fingers while locking the landing gear.



*Figure 3*



*Figure 4*

### 3.4. Control Panel



Figure 5

The control panel positioned on the left rest arm (*Fig. 5*) and may consist of:

- engine head temperature,
- coolant temperature,
- tachometer and hour meter,
- key,
- ignition switch,
- start button,
- primer.

### 3.5 Occupant restraint Harness

The seat is fitted with a restraint harness system.

### 3.6 Engine

3.6.1 The power unit is JPX M25 (2 stroke, 25 hp). The engine is fitted with a belt drive, which delivers smooth thrust via a reduction drive.

3.6.2 The power unit is Polini Thor 250 LS (2-stroke) liquid cooled engine with electric starter. The engine is fitted with a gear reduction unit with 2,8 reduction ratio.

### 3.7 Propeller

Manufacturer: Helix

Type: 2 or 3 Blade Composite

Diameter: 1300 - 1400 mm

The maximum propeller speed occurs when the engine RPM reaches 7900 RPM (JPX M25 engine) or 7500 RPM (Thor 250 engine).

### 3.8 Brake System

A front wheel disk brake system with mechanical drive is used on the ultralight. It is rather effective especially on the asphalt or concrete runways. It is recommended to brake with caution and do not apply too much force to the brake pedal. During landing run use the brake in the second part of the run only, pressing on the brake pedal gradually.

#### CAUTION

THE BRAKE SYSTEM IS RATHER EFFECTIVE ESPECIALLY ON THE ASPHALT AND CONCRETE RUNWAYS.  
BRAKING AT HIGH SPEED SHARPLY WILL RESULT IN THE BRAKE DISC OVERLOAD AND THE BRAKE SYSTEM FAIL.

### 3.9 Emergency Rescue System.

The ultralight may be equipped with emergency rescue system. The rescue system provides for landing in case of emergency without the necessity for the pilot to leave the ultralight in the air.

### 3.10 Adjustable pedals

Depending on the pilot's height, it is possible to reposition the front fork together with the pedals on the ground.

Figure 6 shows the pedals in the front position.

To move the pedals to the rear position, detach the front fork and remove the front wheel fairing. In the kit that came with the trike, find the rectangular rubber insert and place it in the recess of the nose wheel fairing as shown on *figure 7*. Fit the front wheel fork to the rear hole in the front lower beam, fit the nose wheel fairing and tighten the bolt connections.



Figure 6

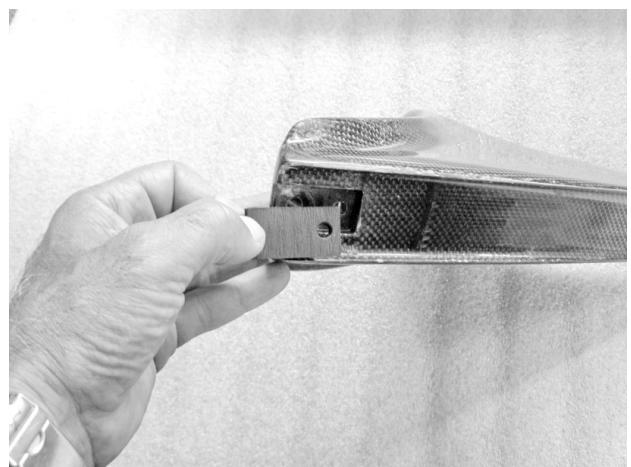


Figure 7

## 4. ULTRALIGHT ASSEMBLY PROCEDURES

### 4.1 Trike Assembly Procedure

The trike is easy to de-rig, pack-up and transport in pack-up bags as shown on the figures below. It comes in two bags – the trike and the engine, with the propeller, the upper pylon and the front brace (*Fig 8, 9*).

The propeller, upper pylon and front strut are transported separately (or they may be transported inside the wing bag).

The assembly and disassembly process is as simple as possible and does not require any tools.



Figure 8



Figure 9

4.1.1 Unzip the bag with the trike (*Fig. 10, 11*).



*Figure 10*



*Figure 11*

4.1.2 Install the front lower beam with the nose wheel.

To do so swing the front lower beam with nose wheel forward, secure it with quick-release bolts (red colored) and wing nuts (*Fig. 12, 13*).



*Figure 12*



*Figure 13*

Adjust the correct tightening of the wing nuts and tighten the bolts with the eccentric levers, then lock them with the safety rings.

4.1.3 Extract both landing gear legs (see photo below) and lock them in position with the lock system as shown on the figures (*Fig. 14, 15 and 16*).



*Figure 14*



*Figure 15*



Figure 16



Figure 17

#### 4.1.4 Open the bag with the engine (*Fig. 17*).

Mount the engine to the main lower pylon and secure it with the two quick-release bolts (black colored) and wing nuts. Adjust the wing nuts to the correct tightening torque and tighten the bolts with the eccentric levers, then secure them with safety rings (*Fig. 18, 19*).



Figure 18



Figure 19



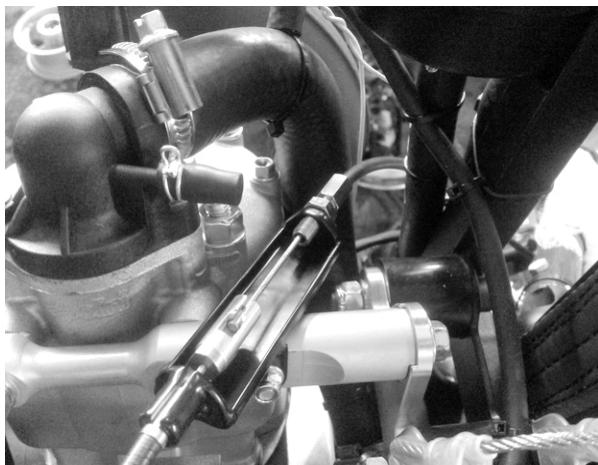
Figure 20

#### 4.1.5 Fix the throttle pedal in its rear position (*Fig. 20*).

4.1.6 Install the throttle rod. Feed the throttle rod with the rod end through the rod support and position it in place as shown on the figures (*Fig. 21-a* for Thor 250 engine and *Fig. 21-b* for JPX M25 engine).

**WARNING**

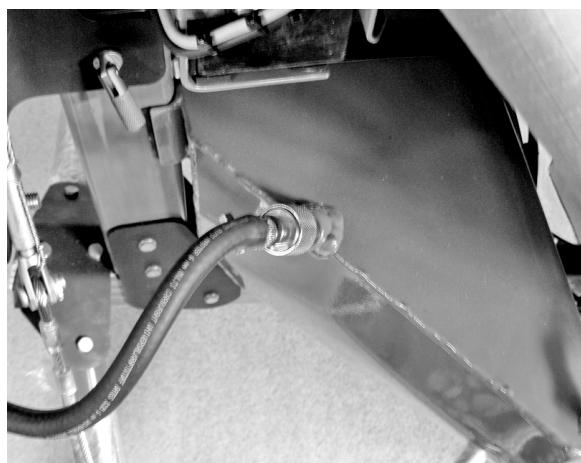
MAKE SURE THE THROTTLE ROD IS FULLY INSERTED INTO THE THROTTLE ROD MOUNT.



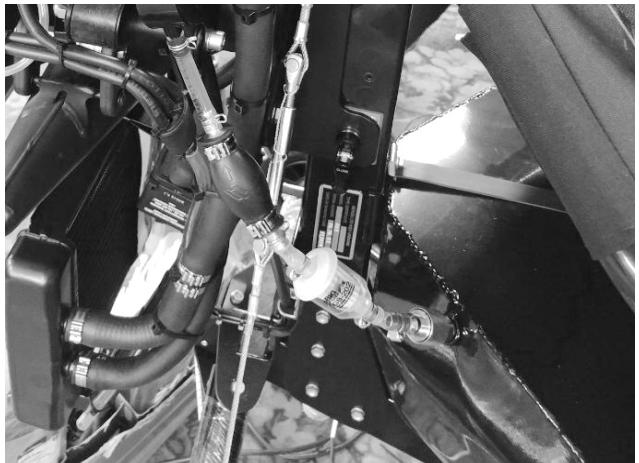
*Figure 21-a*



*Figure 21-b*



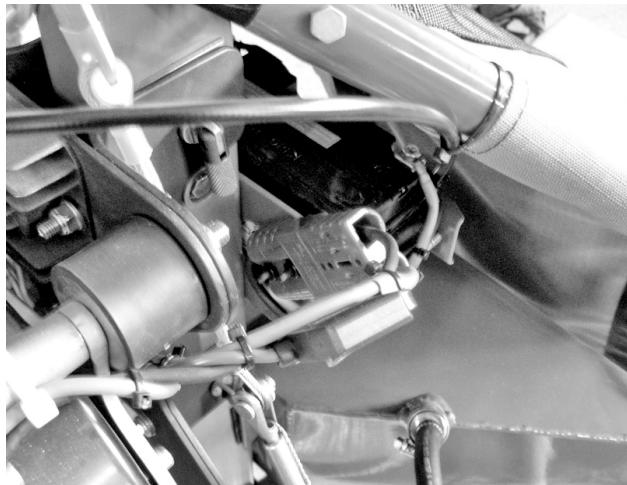
*Figure 22-a*



*Figure 22-b*

4.1.7 Connect the fuel line with the quick connector (*Fig. 22-a* for JPX M25, *Fig. 22-b* for Thor 250).

4.1.8 Connect electric wiring with power connector (*Fig. 23-a* for JPX M25 engine, *Fig. 23-b* for Thor 250).



*Figure 23-a*



*Figure 23-b*

4.1.9 Mount the control panel by installing the mounting plate in to the corresponding pocket on the left side of the trike and fixing it with Velcro (*Fig. 24*). Fix the electric wires hose to the side of the seat frame with Velcro straps (*Fig. 25*).

**WARNING**

IF YOUR TRIKE IS EQUIPPED WITH RESCUE SYSTEM, PLUG THE ENGINE STOP CONNECTOR INTO THE APPROPRIATE SOCKET ON THE INSTRUMENT PANEL, OTHERWISE THE ENGINE WILL NOT START (FOR ENGINE WITH ONE IGNITION CIRCUIT) OR ONE IGNITION CIRCUIT WILL NOT WORK AT ALL (FOR ENGINE WITH TWO IGNITION CIRCUITS).



*Figure 24*



*Figure 25*



*Figure 26*



*Figure 27*



*Figure 28*

4.1.10 Install the main upper pylon and fix it with the quick release bolts (black colored) and butterfly nuts and secure with safety rings as shown on the photo (*Fig. 26*).

4.1.11 Install the front upper brace tube, attaching it first to the main upper pylon (*Fig. 27*) and then to the front lower beam (*Fig. 28*).

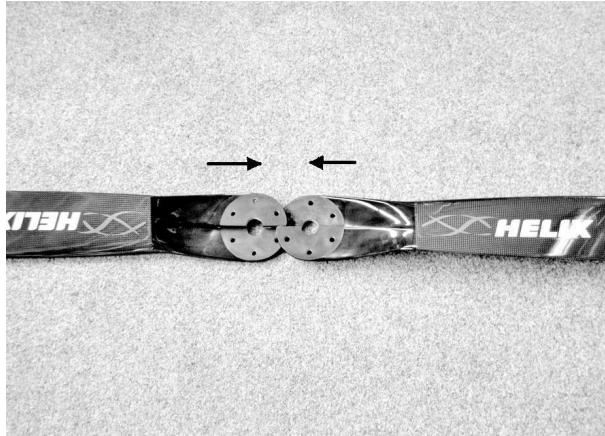


Figure 29

4.1.12 Remove the propeller from the transport cover. Assemble the propeller by aligning the slots on the propeller hub (on the 3-blade prop it is necessary to match the markings: • with •, •• with •• and •• with • before connecting the blades (Fig. 30-b) and sliding the blades until the holes on the propeller hub are fully aligned (Fig. 29 for two-blade prop, Fig. 30-a and 30-b for 3-blade prop).



Figure 30-a



Figure 30-b

#### NOTE

The propeller blades are not identical to each other. Make sure that the propeller is assembled correctly and that the Helix lettering on the propeller blades is on the same side.

#### CAUTION

INCORRECT PROPELLER ASSEMBLY MAY CAUSE IT TO DAMAGE AFTER THE ENGINE START.

4.1.13 Mount the propeller on the trike. Note that the Helix lettering on the propeller blades is on the back. Depending on the modifications, the propeller can be attached with either six bolts (Fig. 31-a and Fig. 31-b) or with a central bolt (Fig. 32-a and Fig. 32-b).



Figure 31-a

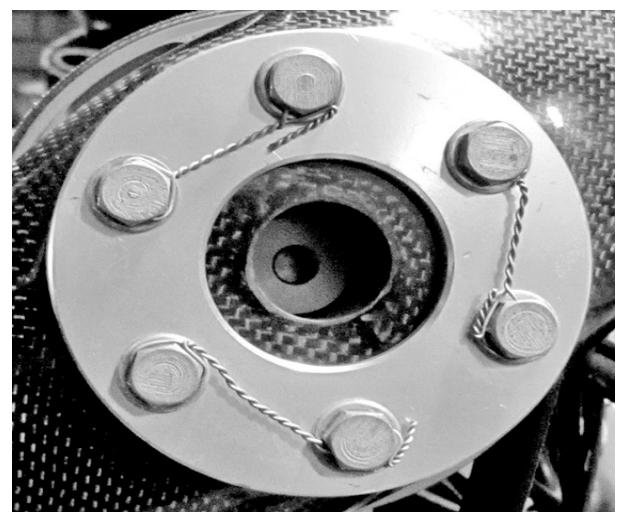


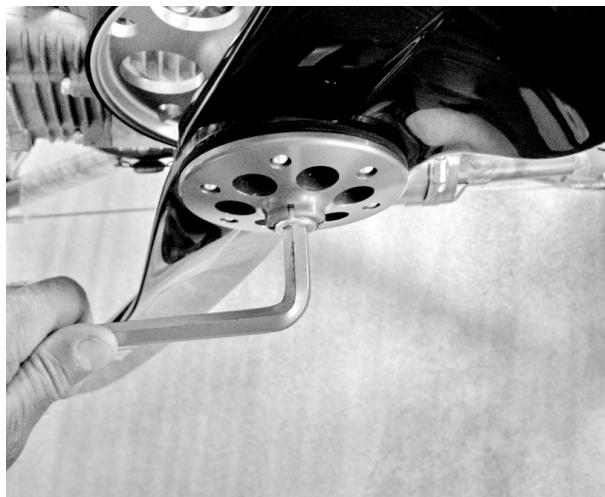
Figure 31-b

On the early versions of the JPX M25 engines and on the Thor 250 engine the propeller is secured with six bolts.

Tighten the prop bolts crosswise to a torque of 22 Nm (*Fig. 31-a*). Do not exceed the tightening torque. Tighten all the prop bolts in pairs with a locking wire so that the locking wire prevents the bolts from loosening (*Fig. 31-b*).

On the JPX M25 engine, the propeller is secured through the propeller hub with one bolt. Fit the rubber washer, flange and tighten the bolt as shown on *figure 32-a*.

Secure the connection with the locking pin (*Fig. 32-b*).



*Figure 32-a*



*Figure 32-b*

Now your trike is ready for attaching the wing.

#### 4.3 Wing Assembly Procedure

Combat-T, Discus-T, Fox-T and Fox-TL wings differ from each other in both flight performance and design, so their assembly procedures are significantly different.

The wing assembly procedure, as well as all necessary information related to the wing, is described in detail in the manual of the wing you have chosen. Please read it thoroughly and make sure it is clearly understood.

### 5. PREFLIGHT INSPECTION OF THE WING

Conduct preflight inspection of the wing before attaching it to the trike as written in a wing Manual. The ultralight preflight inspection is written in section 7. FLIGHT PREPARATION

### 6. ATTACHING A WING TO THE TRIKE

#### 6.1 ATTACHING Combat-T, Discus-T and Fox-T WING TO THE TRIKE

6.1.1 Position the wing on its control frame, facing into the wind, with the nose on the ground and the nose cone removed. Remove the rear part of the keel tube from the wing.

6.1.2 Install the mount bracket to the wing. Place a plastic cube on the keel tube between the two stop rings. Then mount the U-plate, fit the two bolts, hand tighten the nuts and secure with the safety rings (*Fig. 33*).

6.1.3 Check that the ignition switch and the key are in off position. Wheel the trike behind the wing (*Fig. 34*), rolling the front wheel over the control bar. Detach the front strut from the front lower beam and lower the pylon downwards.

Position the propeller horizontal, this will protect it from possible damage.



Figure 33



Figure 34

**NOTE**

Note that the lower bolt in the upper pylon mounting assembly is temporarily loose (*Fig. 35*), as the upper pylon must rotate around the lower bolt when the wing is lifted upwards.



Figure 35



Figure 36

6.1.4 Lift the nose of the wing up until high enough to connect the upper pylon junction of the trike to the mount bracket of the wing (*Fig. 36*). Insert the heart bolt, hand-tighten the nut and secure it with a safety ring. For Fox-T wings, install the safety loop as shown on *figure 37*, for other wing types, connect it by passing it over the keel tube.



Figure 37



Figure 38

6.1.5 Lift the nose of the wing to allow the front wheel to be rolled rearward over the control frame so that the base tube is forward of the front wheel and the rear of the keel rests on the pylon. Make sure the protection pad on the main upper pylon is in proper position and protects the pylon against bottom rear wires (*Fig. 38*).

6.1.6 Having ensured that the keel batten is correctly positioned and resting with its nose on the keel tube, install the nose cone by first attaching it to the upper surface of the wing and then by pulling the lower edges of the nose cone backwards to the lower surface (*Fig. 39*).



*Figure 39*



*Figure 40*

6.1.7 Attach an auxiliary strap to the pedals as shown on the figure (*Fig. 40*).

6.1.8 Go to the nose of the wing. Step on the auxiliary strap with one foot to prevent the trike from lifting up the front wheel when rising the wing up. With the front brace tube in one hand and the base tube in the other hand lift the base tube, rising the wing up (*Fig. 41*). In strong winds maintain a firm grip on the base tube.



*Figure 41*



*Figure 42*

6.1.9 Attach the front brace tube in position using a quick-pin (*Fig. 42*).

6.1.10 In the connection between the upper pylon and the lower pylon, fit the upper quick-release bolt and the wing nut. Adjust the wing nut to the correct tightening torque and tighten the bolt with the eccentric lever, then secure it with the safety ring. Tighten the lower quick-release bolt with the eccentric lever (*Fig. 43*).



Figure 43



Figure 44

6.1.11 In light winds, secure the base tube with the harness straps and park the ultralight against the wind. The angle of attack of the wing should be approximately 0 degrees or less. In fresh or gusty winds, position the ultralight so that the wind direction in relation to the ultralight is to the side and slightly to the rear. Move the base tube towards the front strut and lower the wing facing downwind towards the ground. Fix the base tube to the front strut (*Fig. 44*).

## 6.2 ATTACHING Fox-13TL WING TO THE TRIKE

6.2.1 Check that the ignition switch and the key are in off position. Install the wing mount bracket on the front lower pylon as shown on figures 45 and 46.



Figure 45



Figure 46

6.2.2 Position the wing on its control frame, facing into the wind, with the nose on the ground and the nose cone removed.

6.2.3 Install the mount bracket on the wing (see item 6.1.2).

6.2.4 Turn the propeller so that it is positioned horizontally, this will protect it from possible damage. Detach the front strut from the front lower beam. Press the front strut push pins buttons and fold the front strut tube in as far as it will go. Tilt the upper pylon down and place the lower tip of the front strut on the pilot's seat.

6.2.5 Wheel the trike behind the wing. Lift the control frame of the wing up and rest the base tube on the wing mount bracket. Fasten straps of the mount bracket around the base tube (*Fig. 47*).

6.2.6 Attach the front strut to the front lower beam channel using a quick-pin (*Fig. 48*).



Figure 47



Figure 48

6.2.7 Lift the nose of the wing up until high enough to connect the hang bracket of the wing to the main pylon of the trike. Insert the heart bolt, hand-tighten the nut and secure it with a safety ring. Connect the backup loop so that it passes over the keel tube of the wing and back to the pylon. Hand-tighten the nut and secure it with a safety ring (*Fig. 49*).



Figure 49



Figure 50

6.2.8 Having ensured that the keel batten is correctly positioned and resting with its nose on the keel tube, install the nose cone by first attaching it to the upper surface of the wing and then by pulling the lower edges of the nose cone backwards to the lower surface.

6.2.9. Sit in the pilot's seat. Undo straps around the base tube. Take a firm grip on a base tube and lift it up on your knees first and then all the way up until the push pin of the front brace tube click in position. Install the quick pin to secure the front brace tube from folding in (*Fig. 50*).



Figure 51

6.2.10 In the connection between the upper pylon and the lower pylon, fit the upper quick-release bolt and the wing nut. Adjust the wing nut to the correct tightening torque and tighten the bolt with the eccentric lever, then secure it with the safety ring. Tighten the lower quick-release bolt with the eccentric lever (*Fig. 51*).

6.2.11 Remove the wing mount bracket from the front lower pylon.

6.2.12 Park the ultralight (see item 6.1.11)

6.2.13 For more information on installing the Fox-13TL wing on a trike, see the video: <https://www.youtube.com/watch?v=liqnoVQ2rBo>

## 7. FLIGHT PREPARATION

### 7.1 General

Prior each flight depending on the purposes of flight it is necessary to work out the flight task:

- prepare flight maps and study the flight conditions;
- study meteorological conditions at the departure airfield, on course and at the arrival airfield;
- estimate the possibility of accomplishment the flight task;
- proceed with all necessary formalities which are relative to given flight;
- estimate the necessary fuel state;
- conduct complete preflight inspection of the ultralight.

#### **WARNING**

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

### 7.2 Complete Ultralight Pre Flight inspection

#### **WARNING**

ENSURE THAT THE IGNITION SWITCH AND THE KEY ARE OFF PRIOR TO INSPECTION.

A full pre-flight inspection should precede every flight you make, not just the first flight of the day. Daily inspections as outlined in the Engine Operator's Manual should be carried out in conjunction with the follow inspections.

#### 7.2.1 Trike Pre-flight Inspection

- No leaks from fuel system and engine.
- Fuel filter clean and operational.
- Sufficient fuel for flight.
- No splitting, denting or delaminating of the propeller.
- Propeller hub assembly secure and tie wired.
- No cracking in tire treads, or evidence of cracking around the rim. Wheels are secured.
- No bolts bent, fractured or evidence of corrosion.
- Electrical system secure and operational.
- Throttle operation, both foot and hand throttle (if available). Verify free and full movement.
- Seat belt attachments secure.
- All engine components secure - air filter, muffler, plug leads.
- Mechanical components. Rotate propeller and observe for noise or excessive resistance.

#### 7.2.2 Wing Pre-flight Inspection

The complete preflight inspection of the wing is outline in the wing Manual.

#### 7.2.3 General inspection of the complete ultralight.

Check that the hang bolt and hang bracket is secure.

Check that back up strap is secure.

Check that there is enough fuel to complete the flight.

### 7.3 Before Starting Engine

#### **NOTE**

Your trike is carefully test flown at Aeros factory. However, the brake-in procedure of the engine is rather continuous and has not been finished. It needs about 10 flying hours for the brake-in to be completed.

During this period it is forbidden to use maximum power, except for very short time during take-off.

Good braking-in will prolong the life of your engine.

Safety is everyone's business. Included are only some important safety tips. Keep a good lookout, be thoughtful and always show your intentions prior to starting.

Prior to flight a thorough pre flight inspection of the ultralight should be carried out. Details of the pre flight inspection are shown earlier in this section. Make sure all engine controls are operative and you understand the on/off positions of the throttle and ignition. These controls are readily accessible and you must be able to operate them instinctively without hesitation.

The primary throttle control is foot-operated and may be complemented by the hand throttle (forward for full power and rearward for power off).

The ignition switch forward is for on and rearward is for off. It disables the start button.

#### **CAUTION**

BEWARE OF LOOSE STONES IN THE RUN UP AREA. LOOSE STONES CAN BE SUCKED UP BY THE PROPELLER AND CAUSE SEVERE PROPELLER DAMAGE IN A VERY SHORT TIME. RUN UPS ARE BEST CONDUCTED ON A CLEAR SURFACE OR ON GRASS, NEVER ON GRAVEL

Never run the engine on the ground with the propeller turning unless you are doing so in a run up area and can observe anyone or anything entering the danger area. It is recommended that the engine not be run for any long periods whilst stationary on the ground. Possible damage to the engine may occur due to overheating.

Before starting your engine you should read and be familiar with the engine manual.

### **7.4 Fueling**

Fuel flow is from a single fuel tank fitted with a self-venting tube.

Never refuel if fuel could be spilled on hot engine components. Use only safety approved fuel containers and never transport fuel in an unsafe manner.

The fuel system has an in-line fuel filter. This filter can be easily disassembled for cleaning and inspection.

Fuel tank capacity is 18 liters. Unusable fuel is 0.5 liters.

The remaining fuel in the fuel tank is monitored by means of a measuring tube located directly on the fuel tank. Its purpose is to provide the pilot with a visual indication of the quantity of the remaining fuel.

#### **WARNING**

ENSURE THE ULTRALIGHT IS EARTHED TO AVOID STATIC DISCHARGE IGNITING FUEL DURING THE REFUELING OPERATION

### **7.5 Helmet Recommendation**

The open cockpit of the ANT exposes the pilot to the elements during flight and exposes him to objects outside of the ultralight in an emergency situation.

Helmet and eye protection are recommended to protect the pilot from precipitation, strike by insects. Helmet is also recommended for risk reduction during an emergency landing of the ultralight. The helmet recommended for use in the ultralight is that certified for air sports.

## **8. ULTRALIGHT FLYING**

### **8.1 Starting the engine**

All controls should be checked with the ignition OFF.

#### **CAUTION**

REMEMBER TO CLEAR PROP!

The engine should be started with the pilot in the seat.

The follow procedure should be used:

- Brake is in the on position.
- Hand and foot throttle off.

- Turn the key switch on.
- Switch ignition ON.
- Press the primer three times (or until the fuel volume is filled) unless the engine is hot.
- Check visually that the propeller area is clear and call "Clear Prop" out loud.
- Press on the start button. If the engine refuses to start, switch off the ignition before investigation.
- When the engine starts, increase the engine RPM to a little above idle.
- Warm up the engine (3 minutes for JPX M25). For Thor 250 the temperature should reach no less than 55°C.

Keep an ultralight log and enter any unusual engine behavior. Do not fly unless you have corrected a given problem and recorded the correction in the log.

## 8.2 Taxiing

Before taxiing:

- Wear a protective helmet, wear safety glasses or lower the safety shield of the helmet;
- Make sure the harness straps are fastened;
- If the trike is equipped with a rescue system, remove the rescue system safety pin;
- Make sure there are no obstacles in the taxiing direction;
- Ask for permission to taxi;
- Once cleared, check brakes operation by pressing on the brake pedal and increasing engine rpm - the trike should not move until 1/2 of the throttle pedal applied;
- Reduce engine speed, release the brake pedal;
- Increase engine RPM until the ultralight moved out.

Taxiing in normal conditions is fairly easy.

The control frame should be positioned so that it is in the approximate position for normal trim speed. The pilot's feet actuate steering on the ground. Left turn occurs when the right footrest is pushed forward.

Right turn occurs when the left footrest is pushed forward.

### NOTE

Control sense for turning is opposite to that of a conventional three axis ultralight.

When taxiing in strong wind conditions the follow procedures apply:

- Head Wind conditions require the nose of the wing to be lowered just below the trim position.
- Down Wind conditions requires the nose of the wing to be raised just above the trim position.
- Cross wind conditions requires the upwind wingtip to be lowered.

## 8.3 Before take off

Before flight a full-throttle check is to be carried out. During this operation the pilot must be seated in the cockpit and prepared to switch off the ignition at very short notice if an emergency should arise.

### WARNING

NEVER LEAVE YOUR ULTRALIGHT UNATTENDED WHILE THE ENGINE IS RUNNING.

### CAUTION

BEWARE OF LOOSE STONES IN THE RUN UP AREA. LOOSE STONES CAN BE SUCKED UP BY THE PROPELLER AND CAUSE SEVERE PROPELLER DAMAGE IN A VERY SHORT TIME. RUN UPS ARE BEST CONDUCTED ON A CLEAR SURFACE OR ON GRASS, NEVER ON GRAVEL.

## 8.4 Take Off

The trike has a neutral static balance allowing a safe take-off that is controllable under all suitable flying conditions.

Take off should be made on full power with only the foot activated throttle used during take off.

During the take-off, the control bar should be held in the forward position with the wing level. Accelerate smoothly to the take off safety speed.

When the ultralight reaches the takeoff safety speed it lifts up and the trike rotates quickly on the main wheels. As the ultralight leaves the ground the control bar must be eased back to the trim position to maintain takeoff safety speed.

Maintain your engine in top condition and assume it's going to stop running at any time. Leave yourself a way out for an unexpected engine failure.

Never fly your ultralight at locations, airspeeds, altitudes, or under any circumstances from which a successful engine-off landing cannot be attempted.

## 8.5 Climb

Initial climb out should be made on full power for maximum take off weight. Once climb is established power should be reduced. A minimum of takeoff safety speed should be used. At this speed the ultralight would round out nicely into a glide should the engine fail. Avoid pitching the nose of the ultralight too high to the horizon. Very steep climbs are dangerous and can result in a stall followed by a severe pitching of the nose forward.

### WARNING

NEVER STALL THE ULTRALIGHT WITH THE NOSE PITCHED UP BEYOND 45 DEGREES.

MANOEUVRES BEYOND THIS ARE DANGEROUS AND CAN RESULT IN A TAIL SLIDE FOLLOWED BY A SEVERE TUMBLE.

## 8.6 Cruise

When the desired flight altitude is reached the ultralight may be leveled out and throttle reduced to that required to maintain level flight.

The hand-operated throttle can be used to set engine rpm. Once the hand throttle is adjusted the pressure on the foot pedal may be removed. When the hand throttle is actuated increase power can still be achieved with the use of the foot throttle. The rpm will always return to the cruise setting when foot pressure is removed. If the hand throttle is set a reduction in RPM is not achievable using the foot throttle. The hand throttle must be in the off position to achieve low RPM.

### CAUTION

HIGH-ANGLE CLIMB-OUTS NEAR THE GROUND SHOULD BE AVOIDED.

## 8.7 Descent, Approach and landing

### WARNING

BEFORE FINAL APPROACH, CHECK BOTH LEFT AND RIGHT LANDING GEAR STRUTS POSITION AND MAKE SURE THEY ARE EXTENDED!

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

Approach to the airstrip can be made with or without power, but in any case the airspeed should be maintained above the nominated approach speed.

The ultralight should be flown on final approach at or above the nominated safety speed. The additional airspeed allows for wind gradient, and to provide greater controllability in the rough air that may lie close to the ground. Maintaining airspeed on final is very important for engine-off landings, allowing a margin for round out before touch down.

The trike is designed to land with the rear wheels touching down slightly before the nose wheel. Once firmly on the ground aerodynamic braking may be achieved by pulling in the control bar, then applying the wheel brakes.

### NOTE

After a hard landing, your ultralight must be completely checked.

## 8.8 Cross Wind Landing and Take Off

Pilots with less experience should avoid landing or taking off with high crosswind components, as skills do not always match the capabilities of the ultralight. Crosswind landing or take off with low wind components up to 1 m/s are quite safe and controllable, even to the inexperienced pilot.

The nominated approach speed of 51 km/h should be increased to 60 km/h when landing in cross wind conditions of 5m/s or more.

After touchdown in cross wind conditions the relative airflow over the wing will become increasingly span wise (From tip to tip) as the ultralight slows down. The upwind tip should be lowered slightly (the amount depends on the wind strength), and the undercarriage wheels will retain firm contact with the ground.

Take off procedure is unchanged for the nominated crosswind limit. The upward may need to be lowered at the start of the take off procedure in higher cross winds.

## 8.9 Go-Around Landing

During a situation where a go-around landing is required, normal take off power and procedures should be used.

## 8.10 Stopping the Engine

To stop the engine after a period of running, the ignition should be switched off at idle. If the engine has been running under full power, allow the engine to cool at idle before switching off.

## 8.11 After Landing / Securing

After landing and when in the parking switch the ignition off and set the key in off position. The ultralight should be parked in a crosswind position with the base tube secured to the mast brace. The rescue system safety pin should be inserted before leaving the ultralight.

# 9. LANDING GEAR OPERATION

Please, bear in mind that the main purpose of the retractable landing gear on the ANT trike is significant reduction in the dimensions of the folded in transport position trike. The drag reduction from retracted landing gear is fairly small and it won't be noticeable in flight.

The in-flight landing gear retraction and extension procedures are similar to those described in the section 3.3. Retractable landing gear. The only difference is that the pilot will be sitting in the seat and piloting the trike which will make it less comfortable to operate the undercarriage.

### **WARNING**

PRIOR ATTEMPTING THE LANDING GEAR RETRACTION IN FLIGHT, TRAIN DOING THIS PROCEDURE ON THE GROUND FROM THE PILOT SEAT. SECURE THE TRIKE IN LIFTED POSITION BEFORE TRAINING.

### **WARNING**

DON'T FORGET TO EXTEND THE LANDING GEAR BEFORE LANDING.

# 10. EMERGENCY PROCEDURES

## 10.1 General

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

Always maintain correct airspeed and altitudes in the circuit area.

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

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

Keep a good lookout for other ultralight, always be thoughtful and show your intentions.

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

Maximum maneuvering speed is 70 km/h.

Best glide speed (with maximum load) is 50 km/h.

## 10.2 Engine Failure on Take Off

### 10.2.1 Engine Failure on Take Off Run

If the engine fails on take off run before the ultralight has lifted off proceed as follows:

- pull the control bar in to prevent the ultralight lifting from the ground;
- use pedals to maintain the ground run direction, using the brake at the same time, avoid direct collision with obstacles;
- switch off the ignition.

### 10.2.2 Engine Failure on Climb Out

If your engine fails on climb out before you have reached 5 meters altitude, land straight ahead. Proceed as follows:

- pull the control bar in further than the trim position to prevent the ultralight from loosing airspeed;
- Land in accordance with section 6.7 of the Manual. Avoid direct collision with obstacles.
- switch the ignition off.

## 10.3 Engine Failure at Height

If the engine stops while operating at cruise or full power when the ultralight is well clear of the ground, check fuel contents and make sure that ignition is on.

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

## 10.4 Full Power Engine Shutdown (In Flight)

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

Maintain Control.

Get height with engine at full power, adjust height and ground position to improve the outcome of forced landing.

Increase airspeed to keep the climb angle less than 30 degrees above the horizontal.

Switch off ignition.

Prepare for forced landing, section 10.5.

## 10.5 Forced Landing

Proceed as follows:

Maintain control and airspeed - nominated approach speed.

Close the throttle.

Switch the ignition off.

Tighten the seat belts.

Carry out final approach and landing as closely as possible to normal power off landing procedure.

## 10.6 In Air Engine Fire

For fire occurring whilst in flight, the initial procedure would be to maintain control of the ultralight and evaluate the extent of the fire. This emergency is unlikely to occur but to avoid any further problems, use common sense and land the ultralight safely. Proceed as follows:

Maintain Control  
Ignition off  
Forced Landing  
After landing release seat belt  
Evacuate ultralight.

## 10.7 On Ground Engine Fire

If fire occurring whilst on the ground proceed as follows:

Maintain control and use remaining speed to clear people, others ultralights and buildings.  
Close the throttle.  
Turn the ignition off.  
After stopping release seat belt.  
Evacuate the ultralight.

## 10.8 Propeller Damage

The indication of propeller damage is usually felt by extreme vibration and lack of thrust. Proceed as follows:

Maintain Control and airspeed.  
Close the throttle.  
Turn the ignition off.  
Prepare for forced landing.

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

Ensure that all items carried on board (such as cameras and sunglasses) are secured so they are not able to come loose and pass through the propeller.

### **WARNING**

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

## 10.9 Sail Damage

If you encounter damage to the sailcloth during flight, the first procedure is to maintain control of the ultralight. If the sail damage is not changing the flight characteristics of the ultralight, land at the nearest landing field to inspect the damage.

## 10.10 Emergency Rescue System

The Comelli Cylindricone ballistic rescue system may be installed on the ANT trike.

The rescue system is equipped with a pressure gauge to check the charge of the cylinder before each flight. The reading of the pressure gauge must be between 120 and 180 bar.

The emergency rescue system is only to be used in emergency situations as a last resort and when you are certain that:

- the ultralight has suffered structural damage to the extent that control is not possible; or
- if the ultralight is in an irrecoverable situation where structural damage is likely to occur.

To operate the parachute pull the handle at least twenty centimetres for the parachute rocket projectile to be activated. The parachute will allow the complete ultralight to be lowered to the ground. The emergency system will automatically kill the engine after deployment.

**WARNING**

REMOVE THE EMERGENCY RESCUE SYSTEM PIN BEFORE FLIGHT.

**WARNING**

IT IS IMPORTANT TO REALISE THAT WHILST THE PARACHUTE CONTROLS THE RATE OF DESCENT, THE PILOT WILL HAVE NO CONTROL OVER THE PLACE THE ULTRALIGHT WILL LAND.

For using emergency rescue system proceed as follows:

Tighten seat belt.

Deploy emergency parachute

Prepare for the forced landing.

### 10.11 Stalls

In practice, in level flight it is difficult to induce a nose down stall of the ultralight, although it greatly depends on the wing type you fly. The beginning of stall is indicated by a significant increase in control bar loads.

Recovery from a mild stall is very gentle, whether power is on or off. Recovery is quick, with height loss of less than 20 meters. A stall would have to be forced violently, to induce a danger.

Never stall with the nose pitched up too high. This is a dangerous maneuver and can result in a tail slide followed by a severe tumble.

### 10.12 Spins and Spiral Descents

Deliberate spinning is prohibited.

A spiral dive may develop after a stall if the bar is maintained at the forward limit and a large roll rate is allowed to develop. If this condition is not corrected it will lead to large and increasing roll attitudes (beyond the 60 degree limit). Increasing attitude, increasing speeds and large control bar feed back forces will occur. Incipient spiral dives can be terminated at any time by rolling wing level.

**WARNING**

DO NOT ATTEMPT TO SPIN THE ULTRALIGHT.

SPIRAL DIVES SHOULD NOT BE ATTEMPTED.

DURING DESCENDING TURNS ULTRALIGHT ATTITUDE MUST BE KEPT WITHIN PLACARDED PITCH, ROLL AND AIRSPEED LIMITS.

### 10.13 Icing conditions

Icing conditions: rain, drizzle, wet snow, fog at temperatures of 5°C and below.

10.13.1 If conditions or signs of wing icing appear, make an emergency landing IMMEDIATELY as recommended by paragraphs 8.7, 10.5.

10.13.2 When flying at temperatures close to zero, watch for the appearance of possible icing conditions. Carefully sweep off frost, frozen droplets, snow, dew and rain droplets from the leading edge of the wing before flight. Their presence leads to a strong deterioration of the stability and controllability of the ultralight.

**WARNING**

FLYING IN ICY CONDITIONS AND IN THE PRESENCE OF SNOW ON THE WING IS PROHIBITED.

DO NOT FLY IN ICY OR SNOWY CONDITIONS!

**WARNING**

THERE IS A HIGH RISK OF ICE BUILDING IN THE CARBURETOR OF Polini Thor 250 ENGINE AT ENVIRONMENTAL TEMPERATURE 0 - 8°C AND HIGH HUMIDITY, THIS CAN CAUSE THE ENGINE STOP!

## 11. ULTRALIGHT DE-RIGGING PROCEDURE

Careful attention to the recommended rigging and de-rigging sequences will protect the ultralight from the risk of unnecessary damage.

The de-rigging procedure is a direct reversal of the rigging procedure.

### 11.1 Removing Combat-T, Discus-T and Fox-T Wings from the Trike

The procedure for removing the Combat-T, Discus-T and Fox-T wings from the trike is in reverse order to attaching the wing (see paragraph 6.1):

- ensure that the ignition switch and the lock key are in the off position;
- position the ultralight with its nose against the wind;
- remove the upper pylon quick-release bolt by releasing the bolt with the eccentric lever, removing the control ring and unscrewing the nut;
- release the lower quick-release bolt with the eccentric lever;
- remove the "quick pin" fixing the lower connection of the front strut;
- using the auxiliary strap, take the front strut in one hand and the centre of the control bar in the other and lower the wing with the trapeze down until the control bar is on the ground;
- drive the trike nose wheel over the control bar inside the wing's trapeze;
- remove the wing nosecone;
- detach the back up loop;
- unbolt the trike from the U Bracket of the wing;
- lower the nose of the wing to the ground;
- remove the mount bracket from the wing.

### 11.2 Removing Fox-13TL Wing from the Trike

The procedure for removing the Fox-13TL wing from the trike is in reverse order to attaching the wing (see paragraph 6.2):

- ensure that the ignition switch and lock key are in the off position;
- position the ultralight with its nose against the wind;
- mount the wing mounting/removal bracket on the lower beam;
- remove the upper pylon quick release bolt by releasing the bolt with the eccentric lever, removing the control ring and unscrewing the nut;
- release the lower quick-release bolt with the eccentric lever;
- remove the front strut locking "quick pin";
- sitting in the pilot's seat and holding the control bar, simultaneously press the spring release buttons on the front brace tube and lower the wing first into your lap and then down, placing the control bar on the wing mounting/removal bracket;
- secure the bracket straps around the control bar;
- remove the nose cone;
- detach the back up loop;
- unbolt the trike from the U Bracket of the wing and lower the wing nose to the ground;
- disconnect the front strut from the lower beam. Tilt the main pylon down and place the lower tip of the front strut on the pilot seat;
- unfasten the straps around the control bar;
- lift the wing trapeze upwards and roll the trike backwards, then lower the wing onto the control bar;
- remove the wing mounting/removal bracket from the lower pylon;
- remove the mount bracket from the wing.

For more information on removing the Fox-13TL wing from a trike, see the video:  
<https://www.youtube.com/watch?v=D2GxGgtRxU>

### 11.3 Wing Break Down Procedure

Combat-T, Discus-T, Fox-T and Fox-TL wings differ from each other in both flight performance and design, so their break down procedures are significantly different. The wing disassembly procedures, as well as all necessary information related to the wing, is described in detail in the manual of the wing you have chosen. Please read it thoroughly and make sure it is clearly understood.

## 11.4 Trike Disassembling Procedure.

The trike disassembling procedure is simply reverse to the trike assembling procedure (See section 4.1 Trike Assembly Procedure).



Figure 52

For Thor 250 engine to avoid the fuel leakage from the fuel line it is required to empty the fuel from the carburetor before disconnecting the fuel line.

Easy off the hose fitting as shown on the *figure 52* and drain the fuel from the carburetor through the drain hose.

## 12. HANDLING SERVICE AND MAINTENANCE

### 12.1 Introduction

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

#### WARNING

IT IS THE PILOTS RESPONSIBILITY TO ENSURE THAT ALL AIRWORTHINESS DIRECTIVES HAVE BEEN ADDRESSED. IT IS ALSO THE PILOTS RESPONSIBILITY TO ENSURE SERVICING AND MAINTENANCE HAS BEEN PERFORMED.

### 12.2 Identification Plate

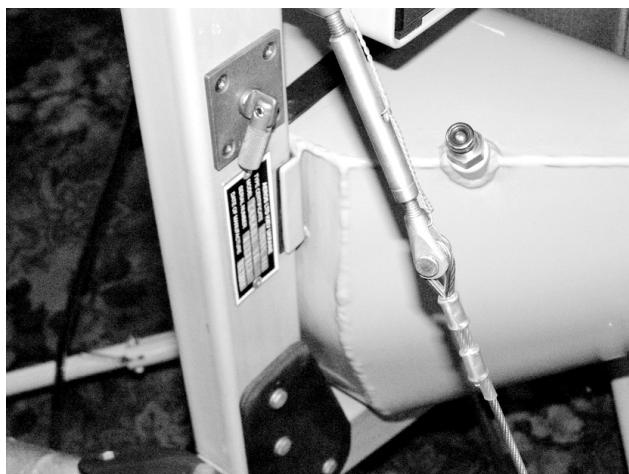


Figure 53

The trike identification plate positioned on the main pylon, right side (*Fig. 53*). The Serial number should be quoted when corresponding with the factory.

For the wing identification plate position please refer to the wing Manual.

## 12.3 Fuel Sampling

There is no drain cock on the fuel tank. To draining fuel from the fuel tank proceed as follow. Open the filler neck. Lift the front wheel of the trike up until the fuel drain out from the filler neck. It is especially important to remove any water that may have been introduced from the system.

The fuel is checked for water and contaminants by draining a sample of the fuel into a clear glass container. Once a sample has been taken the quality of the fuel can be checked by looking for any water at the bottom of the glass, and checking for any other visual contaminants. Ensure that there are no ignition sources and that the fuel is disposed of correctly.

If the fuel has been sitting for an extended period without use it may be advisable to replace it with fresh fuel.

## 12.4 Lubricating Oil

### Engine lubrication

Mixture lubrication: Super two stroke oil ASTM/CEC standards, API-T classification (e.g. Castrol TTS) mixing ratio 1:50 (2 %) for Polini Thor 250 and 1:40 (2.5 %) for JPX M25.

### Polini Thor 250 gear reduction unit lubrication

ELF Moto Gear Oil 10 W 40 ANTI Clutch Slippage oil. As an alternative you can use also Shell advance gear SAE 10 W 40 API GL-3 oil or oil with 10W40 viscosity compatible with clutch (similar to motorcycle engine oil).

## 12.5 Fueling

Do not refuel the ultralight when it is raining (snowing), very dusty, unless measures are taken to prevent precipitation and dust from entering the filler necks. Do not refuel the ultralight during thunderstorms.

Do not start the engine, do not turn on the ignition switch, do not use explosive electric lamps or carry out any assembly or disassembly work on the ultralight during refueling.

It is forbidden to refuel the ultralight if there is another aircraft with a running engine at a distance of less than 25 m.

The ultralight must be properly grounded before refueling.

Before refueling, make sure the fuel is free of water and mechanical contaminants. Fill the tank through a funnel with a filter, taking into account fire precautions. Do not allow dust, dirt and foreign contaminants to enter the tank. When filling the tank, keep fuel away from the seat and wheel pneumatics.

Poor quality fuel is the main cause of engine failures.

Do all fuel work outdoors or in a well ventilated area and observe general safety precautions.

Use clean containers with a filter sump and expansion space for storing fuel.

Do not use fuel after a long period of storage.

Drain fuel from the fuel system when not in use for more than a week.

Fill fuel through a filter with a filter fineness of at least 0.15 mm.

Do not fuel the ultralight while the engine is running.

Do not operate the ultralight with fuel spilled on the ultralight components or at the ultralight parking area.

## 12.6 Tire Inflation

The recommended tire inflation pressures are 2 Bar for both the front and rear tires. When checking the tire pressures the opportunity should be taken to examine the tires for wear, cuts, bruises and other defects.

## 12.7 CORS-AIR M 25 Y Engine Maintenance

Every 20 hours:

Check the exhaust system condition

Check the condition and gap (0.7 mm) of the spark plug

Clean the air-filter, the carburetor filter placed at the end of the fuel pipe and the filter of the fuel tank

Check the torque of every bolt  
Tighten head nuts (in cross order) with a Torque Wrench at 2.2 Kg.m (22Nm)  
Check the tension and condition of the reduction belt  
Check fuel lines  
Check the wiring  
Check that the cord of the starter has no abrasions  
Grease the link-sphere between the manifold and the exhaust pipe with lubricating copper-grease suitable for high temperature (up to 1100°). If you can't find it on the market, please ask your dealer.

Every 50 hours:

Same controls of the 20 hours and furthermore:  
Check the torque of the engine's crankcase nuts  
Change spark plugs  
Change the petals of the reed valve  
Check the reduction belt and the play of the pulley and change them in case of need  
Check the conditions of the starter gears (version with electric start)  
Once a year (independently from flight hours) change the diaphragm of the carburetor.

Refer to the CORS-AIR M 25 Y Manual for more information.

## 12.8 Thor 250 Engine Maintenance

Before each flight:

Check the exhaust system condition  
Check the electric wiring condition  
Check fuel line condition  
Check the bolts and screws tightening  
Check the silent-block conditions

After the first 10 hours:

Replace the gear oil  
Check the carburetion

Every 50 hours:

Replace spark plug (use Champion RN2C plugs)  
Clean the air filter  
Replace the gear oil  
Check the starter wearing

Every year or every 100 hours:

Replace the air filter  
Clean the carburetor  
Replace the silent-block  
Replace the fuel system pipes

Every 100 hours:

Replace muffler springs  
Check the reed valve  
Check the piston, the piston rings and the small end bearing  
Decarbonize and clean the decompression hole

Every 150 hours:

Remove the gear and check the clutch and bell wear  
Replace the piston, the piston rings and the small end bearing  
replace the silencer deadening material

Replace the reed valve

Every 300 hours:

Replace all the bearings and seals  
Replace the crankshaft  
Replace the cylinder

Refer to the Polini Thor 250 Manual for more information.

## 12.9 Exhaust system

Every 20 hours, lubricate the joint between the outlet of the exhaust system and the exhaust pipe with high temperature (up to 1100°C) grease. Inspect the exhaust system periodically for cracks. The springs must be fitted so that they do not rub against the silencer and so that the springs are not lost if they fail.

## 12.10 Wing

For all necessary information on wing operation and maintenance, refer to the relevant wing manual for the specific wing.

# 13. TRANSPORTATION AND STORAGE

With good care and correct maintenance your trike will retain its good conditions for many years.

We recommend that you do not expose your trike to any more direct sunlight than necessary. Do not leave under the sun for long periods of time when you are not flying.

Do not leave your wing on the trike for a long period of time in strong winds. It will decrease the life of the sail, the hang joint and the frame of your trike.

The trike and the engine may be transported in their bags in any vehicle that offers protection from mechanical damage, soiling and long exposure to rain. It is not recommended that the engine be carried or transported without its bag.

During transportation, or when stored on supports, the wing must be supported not less than in three points: at its center and at two more points.

Supports should be softly padded, and any support systems used for transport, such as roof racks, must use attachment straps that are sufficiently secure to eliminate the possibility of damage from vibration and movement. Flat straps should be used for tie downs to avoid damage to leading edge Mylar.

Store the trike in a dry room off the ground; air the trike out regularly to avoid mildew, and never store wet.

If you fly at the costal area or your ultralight has been exposed to salt water dismount it and rinse with tap water thoroughly before storage. If you fly frequently at the costal area it is necessary to wash the ultralight with tap water at least once a month to prevent all aluminum parts from corrosion.

The recommended storage temperature is from -10 to +25° C.