Eurofly Snake
Pilot Operating Handbook

Version 1.0 (March 2018)

Congratulations on purchasing the nanolight Eurofly Snake trike. Designed and manufactured by a company with over 30 years of experience in the aviation industry the Snake offers safe fun flying in an affordable package.

Due to the flexibility of the Snake being compatible with a wide range of wing and engine combinations, this manual is written with the Grif 3DC wing and Cisco C-Max 175 engine in mind. Variations will occur if used in a different configuration- please refer to the appropriate manual or contact the UK importer Airplay Aircraft Ltd for advice if unsure.

This manual should be sold with the aircraft, and updates may be found by contacting Airplay Aircraft Ltd at http://www.airplayaircraft.co.uk. If you have purchased a used Snake please pass your contact details to Airplay Aircraft Ltd so we can keep you updated on product developments and safety critical information.

Regulations for flying in the UK

At the time of writing (March 2018) there exist two options for the legal flight of the Snake in the UK.

Currently CAA exemption E4658 allows flight under the following conditions:

1. The aircraft must demonstrate a minimum steady flight or stall speed not exceeding 20knots Calibrated Air Speed.
2. The aircraft has a maximum unladen mass including full fuel of 70kg, or 75kg if fitted with an emergency parachute recovery system.
3. The aircraft must not be flown with more than one person on board.
4. All restrictions relevant to a Self-Propelled Hang-Glider (SPHG) must be complied with.
5. 3rd-party insurance must be carried to comply with European insurance regulation 785/2004.

Alternatively, the Snake can be flown as a Single-Seat DeRegulated (SSDR) Microlight. An NPPL(microlight) or equivalent licence is required and the aircraft must be registered with the CAA. However, this allows a far greater range of performance wings, engines and empty weights to be legally operated.

Note: in all cases the pilot is responsible for the legal and safe operation of the aircraft, and should satisfy themselves as to the current air law requirements.

Do not attempt to fly this aircraft without training. As a minimum this should include training on a two-seat flexwing microlight to at least a solo standard. Even if you are an experienced hang-glider pilot do not be tempted to “have a go”. Significant differences involved with powered wheeled aircraft exist and appropriate differences training will help you enjoy your new Snake.

Rigging the aircraft

1

Place the wing nose into wind.

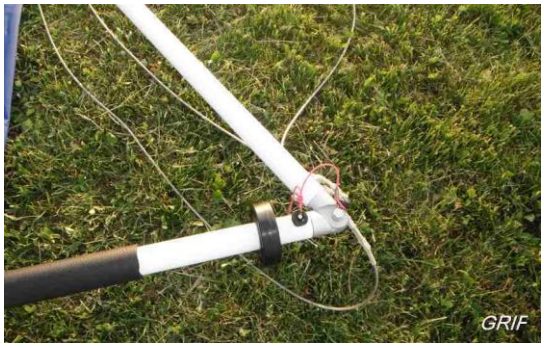
2

Open the bag and remove the straps.

3

Assemble the A-frame without tangling any cables.

4



Insert the push-pin from the front of the A-frame and secure.

5

Roll the wing onto its front, laying the A-frame underneath the wing.

6

If the wing has been short-packed, retrieve the outer leading edges.

7

Match the correct leading edge tube (red is the port or left side when viewed from behind the wing).

8

Insert the outer leading edges in turn and ensure they are fully home. Check that the sprung pin is fully secure- preventing the outer leading edge from rotating.

9

Pull the wingtip bolt over the notch in the outer leading edge.

10

Check that the sail is not twisted and leading edges are secure.

11

Insert the nose batten and locate over the foremost bolt in the noseplate.

12

Check the pull-back cables aren't twisted and are free to move.

13

Position the kingpost fully home and ensure the pull-back cables are on either side of it (red to port).

14

Check that the luff lines and cables are in good condition and aren't twisted or kinked.

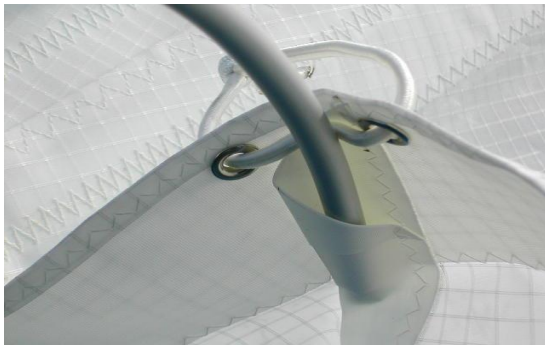
15

Spread the wings slowly in stages. Stop if any resistance is felt.

16

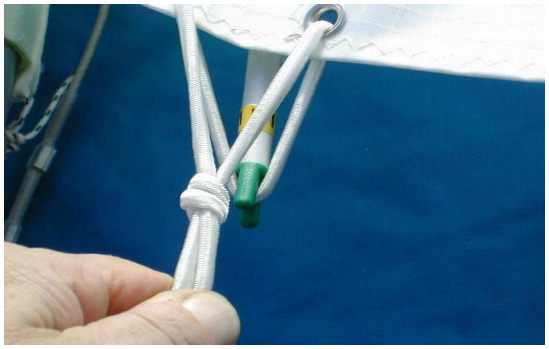
Working from the centre outwards, insert the upper surface battens.

17



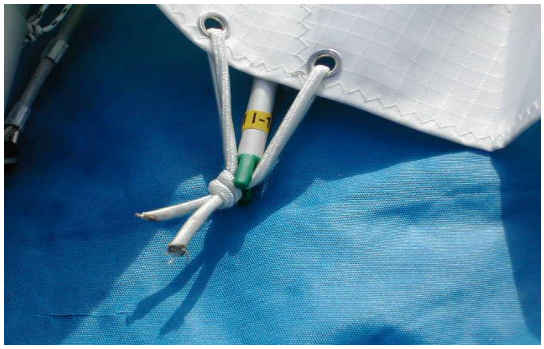
Insert smoothly and stop if any undue resistance is felt.

18



Check each batten is fully home, then secure with both loops of bungee cord.

19



The battens are colour coded; green is starboard, red is port.

20

Check the battens all fit and create a uniform shape.

21

After checking everything moves freely, grip the pull-back cables using the webbing handle.

22

Pull the retaining ring over the mounting point, and ensure it is fully home (all the way down).

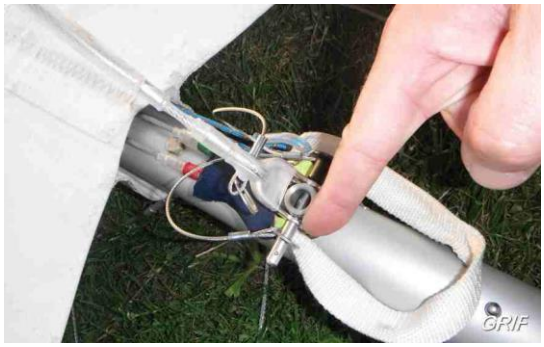
23

Locate the rearmost top rigging cable and ensure it is not twisted and in good condition.

24

Secure the cable with the quick-release pin through the mounting block.

25



Check that the pin is secured correctly with the washer, the pull-back cables aren't twisted and correctly handed (red to port).

26

If desired the webbing handle can be retained with bungee cord as seen here.

27

Lift the wing onto the A-frame by lifting the nose and fitting the swan catch.

28

Secure the swan catch with the pushpin.

29

The completed noseplate.

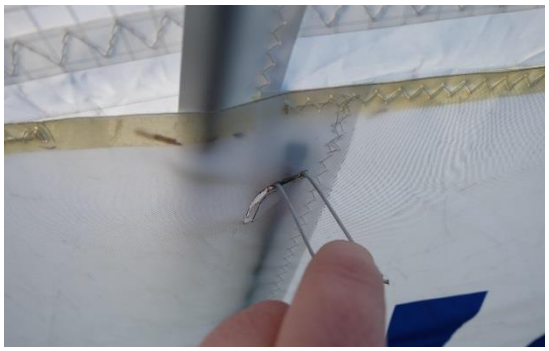
30

Lower the wing onto its nose (facing into wind).

31

Insert the under-surface battens with the duck feet toward the leading edge.

32



Position the under-surface battens inside the sewn pockets and gently pull the batten rearward with the nylon loop to secure.

33

To rig the trike insert the gear legs, ensuring the correct orientation of the wheels.

34

Secure both gear legs with a bolt, wingnut & safety ring.

35

Line up the trike with the wing and rotate the prop horizontally to avoid snagging the rear rigging.

36

Insert the hang-bolt with a washer either side of the bracket and secure with a wingnut and safety ring.

37

Remove the stinger keel extension and lift the nose, allowing the trike to roll backwards over the basebar. Then fit the nosecone and chock the rear wheels.

38

Lift the wing keeping the basebar horizontal. In strong winds move the bar backwards to limit the angle of attack of the wing.

39

Insert the bolt to lock the pylon in position and secure with a wingnut & safety ring.

40

Attach the front strut. It's usually easiest to insert the lower pin first.

41

Secure the front strut with a clevis pin & safety ring or quick-release pin as supplied.

42

The completed front strut arrangement. Now give the aircraft a thorough pre-flight inspection.

De-rigging is the opposite of this procedure. Remember to rotate the propellor to the horizontal before lowering the wing.

Rigging on the A-frame

The previous rigging guide shows the wing being rigged flat on the ground, which is advised whenever conditions are windy. Alternatively, the wing can be lifted onto the A-frame (step 27) before spreading the wings. Use of the keel extension ("stinger") tube can help keep the wing clear of muddy ground and make it easier to insert the battens. In most cases the stinger can be left in the wing during flight without consequence.

Pre-flight inspection

A thorough inspection of every component of the airframe should be carried out before each and every flight once rigging is complete. Remember, damage may be incremental due to slow wear & tear and thus difficult to spot. A written checklist or use of a routine (such as working clockwise around the entire aircraft for example) may help.

Flying Notes

When taxiing the Snake, bear in mind that is much lighter than most microlights with a much higher centre of gravity than most hang-gliders. That said, the aircraft is quite stable in winds up to around 20mph as long as the correct technique is used. It is usually best to keep the bar neutral in pitch when facing into wind and fully forward when a tail-wind is experienced. With any cross-wind component the into-wind wing should be slightly lowered to achieve the optimum "balance-point". As with most things in life, if you find taxiing hard work you're doing it wrong!

The foot brake should primarily be used for emergency stops and to prevent the trike from moving whilst carrying out pre-flight checks. Avoid riding the brake during taxiing- this will very quickly wear out the brake material and require increased maintenance.

Suitable weather for flying (aside from maintaining the legal VFR minima) is very much a question of pilot experience. Novice pilots should restrict themselves to wind speeds of no more than 10mph without turbulence or crosswinds when first flying the Snake and expand their personal weather tolerance slowly.

The 3DC wing exhibits light handling qualities, even compared with many king-posted intermediate hang-gliders. Pilots who are used to flying heavier microlights should be prepared for a far greater response to control inputs than they are used to. Remember that you are flying the wing (not the trike) and concentrate on keeping the basebar level with the horizon during your early take-offs. The aircraft literally needs a finger & thumb on the bar to retain full control- don't wrestle with it!

Once mastered the 3DC is a joy to fly, with light roll inputs capable of reversing a 30° bank turn in a couple of seconds. The pitch effort required is very light around the trim speed, with positive feedback building as you reach the extremes of bar forward/aft.

The stall is preceded by an increase in bar back pressure and sometimes a gentle pre-stall buffet. The optional vortex generators have the effect of reducing the stall speed by 3-4mph and reducing the likelihood of a defined stall break. Depending on pilot weight, with the vortex generators fitted it is sometimes possible to rest the bar against the front strut without having reached the critical angle of attack, so remaining flying under full control.

Please note that some heavier pilots may need the vortex generators fitted to comply with the 20knot stall speed requirement for SPHG operation. Be careful if many of the vortex generators on one side of the wing are knocked off during rigging; an unequal distribution of the stick-on plastic fittings may increase the chance of a wing drop at the stall. They are easily replaced using the additional tape provided, or contact your dealer if you've run out of spares.

A standard into-wind landing is normally carried out with a glide approach, and the bar held back to increase airspeed to around 40-45mph. Turbulence, cross-winds, wind gradients etc may make it prudent to approach at a higher airspeed, but be careful of pilot-induced oscillation as the roll control gets even lighter at higher speeds. If you find yourself alternately rolling left then right during the approach, go-around and relax your grip on the next attempt. A standard round-out and hold off should be easily achievable with the excellent visibility afforded by the Snake. In calm conditions a fully held-off (bar touching the front strut at the point of touchdown) landing will result in a very gentle arrival at the minimum possible speed, and rarely should require any use of the brake.

The Snake responds well to standard techniques for cross-wind, short & soft-field situations. If you are at all unclear as to what these entail it would be a good idea to spend some time with an instructor. This will help you get the best out of the Snake and give you confidence to fly more often.

Wing Tuning

Wing tuning should only be attempted by experienced pilots. If at all unsure, contact your dealer for advice. In any case, make all adjustments slowly and in increments.

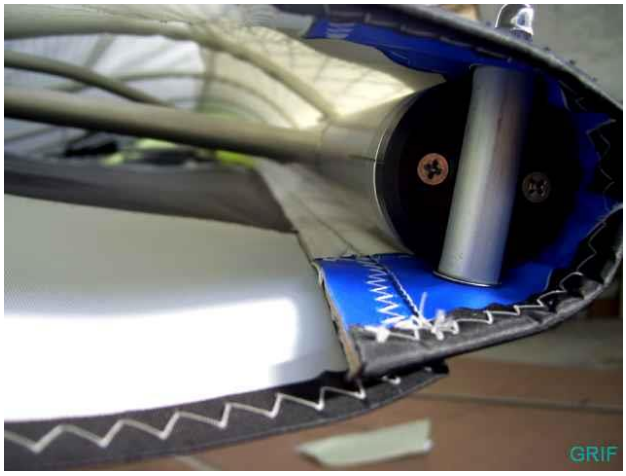
The 3DC features an adjustable hang-point for changing hands-off trim speeds. By moving the plastic spacers (with the wing removed from the trike) fore and aft of the hang-block the centre of gravity for the wing can be adjusted. Moving the hang-point forward will increase pitch stability and hands-off trim speed, which will normally require an increase in power to maintain level flight. Moving the hang-point rearward will have the opposite effect.

The hang-point on the Snake/3DC is normally setup on the rear-most but one position, which is ideal for soaring efficiency and normally results in a trim speed of around 35mph. If you make adjustments to this, do it one spacer at a time and test-fly; flexwing aircraft are very susceptible to slight changes in CofG.

All flexwing aircraft should remain straight and level without any input from the pilot in still air. If your wing develops a persistent turn then you should be able to remedy this with the following procedure. Remember, if your wing has suddenly changed flying characteristics, this is usually a sign of undiagnosed damage!

Firstly, remove the battens from the de-tensioned wing and check for conformity with the batten plan. In particular they should be symmetrical from one side of the wing to the other. Then re-rig the wing and fly it- sometimes simply de-tensioning the wing can allow the sail to shift slightly on the frame. If a turn is still present at all speeds then use the following procedure (shown to correct a left turn- do the opposite if your wing turns right):

1



Check that both wingtip adjusters are as set by the factory (with the marks lined up on the leading edge).

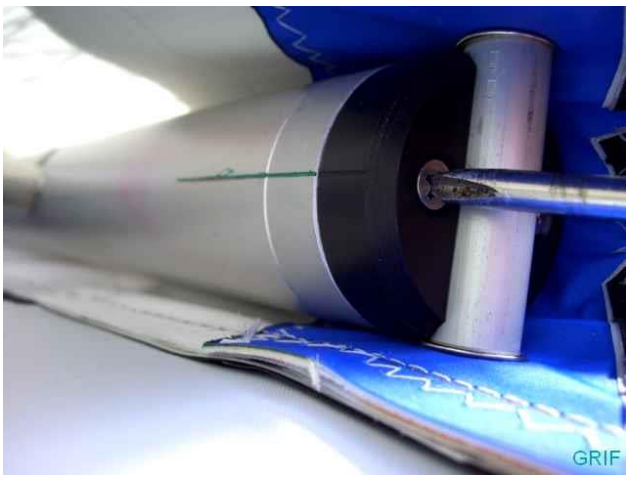
2

Working on the wingtip that is rising during flight, take a Phillips head screwdriver..

3

.. and undo both screws approximately 6mm.

4



Give the screwdriver head a sharp tap to push the screws (and retaining block) away from the wingtip.

5

With the tension released, you can now rotate the wingtip up 1mm at a time (to a maximum of 3mm) before tightening the screws and test-flying.

6

If the turn is still present after raising the wingtip 3mm, move to the other wingtip and lower it in 1mm steps (up to a maximum of 3mm).

Maintenance Schedule

If well cared for the Snake should give you decades of flying enjoyment. A thorough pre-flight inspection is necessary for maintaining the aircraft in an airworthy condition. Remember that there aren't many spare parts on a nanolight, and you are reliant on them all working to keep you alive! A ballistic aircraft recovery system is not a replacement for a good maintenance schedule. A logbook of hours flown and any maintenance carried out is vital, and will also help protect your resale value.

If rigging from the bag each time pay particular attention to the cables. Any kinks or broken strands will significantly weaken the cable and flight must not be attempted. Any wear or cuts to the sail (particularly near the trailing edge or wingtips) can result in structural failure when exposed to flight loads. Also pay close attention to the seat fabric and bolt holes on the trike; hard use can elongate these holes or damage the seat fabric.

After any hard landing the trike and wing should be stripped and the sail removed from the frame. The undercarriage on the Snake is remarkably strong, and although this may look fine the landing shock may have damaged other parts of the airframe. Check bolt holes for elongation or cracking using a penetrant dye or magnification as appropriate and check all tubes for straightness. Please also consider that if you ever have a hard landing you're doing something wrong and probably should have gone around!

Ideally the trike and wing should both be stored in a dry area, free of vermin. De-rigging the wing should not reduce the life of the aircraft if done carefully, ensuring that the cables are not kinked and straps are not tightened to the point of bending the tubes (particularly important if transporting on a car roof rack). Supporting the wing in more than two places, or strapping the wing to a ladder is recommended in this case. It is a good idea to remove the undercarriage legs from the steel trike frame when stored to reduce corrosion.

The sailcloth will degrade with exposure to Ultra-Violet light. Whenever possible keep the rigged wing out of direct sunlight or consider derigging.

The engine manual will list the recommended maintenance schedule. Being familiar with your engine, and particularly keeping the carburation and fuel system in good working order will ensure reliability for years to come. There are people who don't know enough about their engine, and there are people who suffer a lot of engine failures. Membership of either group is not mandatory.

There is no legal requirement to carry out any specific engine/airframe maintenance schedule on your aircraft. However, for your safety it is strongly recommended that you perform the following schedule and record the work in a logbook:

- Every flight:
    - Perform a thorough pre-flight inspection of every visible component.
    - Ensure the throttle linkage performs correctly and returns to idle immediately.
    - Check the brake is correctly adjusted and functioning.
    - Check the engine and seat mounts are secure and positioned correctly.
    - Check the seat harness is undamaged, particularly around the webbing straps.
    - Check the condition of the propellor. Any cracks or delamination must be investigated.
    - Check the fuel tank is connected securely and any air is bled from the system.
    - Check the fuel tank for condensation and discard the fuel if any is found.
    - Replace the fuel filter if it contains visible debris.
- Every 50hrs/6 months:
    - Remove the wing from the trike and inspect the hang-point for wear or twisting.
    - Check battens for distortion.
    - Remove the undercarriage legs from the trike and check for damage or corrosion.
    - Treat all exposed metal with ACF50 or other corrosion inhibitor.
- Every 100hrs/2 years:
    - Remove the sail from the frame and inspect all bolt holes for cracking/elongation.
    - Replace the lower rigging cables on the wing and fixing bolts. Inspect all other cables.
    - Carry out a "Betts test" of the sailcloth material. A minimum of 1000g should be tested on at least four points across the sail without tearing, otherwise replacement may be necessary. Contact your

dealer or local BMAA (British Microlight Aircraft Association) inspector if you are unsure about performing the “Betts test”.

- Replace the fuel filter and primer bulb if fitted.
- Remove the pylon from the trike and inspect bolt holes for cracking/elongation.

Technical Specification

Grif 3DC wing

Area (m^2)	Wingspan (m)	MTOW (kg)	Stall speed (kts)	Cruise speed (kts)	VNE (kts)	Weight (kg)	Battens	Folded length (m)	Quick-pack length (m)	Short-pack length (m)
13.5	9.4	190	20	31	46	28.8	13 + 4	5.32	4.58	3.57

Snake trike

Length(mm)	Height(mm)	Width(mm)	Typical weight(kg)	Design seat load(kg)	Standard fuel capacity (l)
1900	2180	1340	33 (C-Max engine)	100 (@+6G)	10

Notes