Nano 4

User manual

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GIN

WARNING: Read this user manual before first flight!

Like any extreme sport, speedflying/paragliding involves unpredictable risks which may lead to injury or death. By choosing to fly, you assume the sole responsibility for those risks.

Because it is impossible to anticipate every situation or condition that can occur while speedflying/paragliding, this manual makes no representation about the safe use of the wing under all conditions. Neither Gin Gliders nor the seller of GIN equipment can guarantee, or be held responsible for, the safety of yourself or anyone else.

Many countries have specific regulations or laws regarding speedflying/paragliding activity. It's your responsibility to know and observe the regulations of the region where you fly.

Gin Gliders reserves the right to alter or add to the contents of this manual at any time. You should therefore regularly visit our website:

www.gingliders.com

where you will find additional information relating to your speedrider and any changes to the manual. The date and version number of this manual are given on the front page.

Thank you...

..for choosing Gin Gliders. This user manual contains important information for the use and maintenance of your speedriding glider. Detailed knowledge of your glider and equipment will help you to fly safely and make the most of your flights.

Your GIN speed glider has been designed to meet the official standards for speedriding gliders. These requirements also include the need to familiarise yourself with this user manual and the information and instructions regarding safety, equipment and service prior to the initial commissioning. These operating instructions must be fully read and understood before the first flight.

Keep this manual for reference, and please pass it on to the new owner if you ever re-sell your speedrider.

If you have any further questions about these operating instructions, please contact your GIN dealer in the first instance, or Gin Gliders directly.

We wish you exciting flights and always a safe landing.

Your GIN team

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Gin Gliders

Dream

In forming Gin Gliders, designer and competition pilot Gin Seok Song had one simple dream: to make the best possible paragliding equipment that pilots all over the world would love to fly—whatever their ambitions.

At Gin Gliders, we bring together consultant aerodynamicists, world cup pilots, engineers and paragliding school instructors, all with one goal: creating better paragliders.

Touch

We're a "hands-on" company that puts continuous innovation and development at the centre of everything we do.

At our purpose-built R&D workshop at head office in Korea, we are able to design, manufacture, test-fly and modify prototypes all in a matter of hours. Our international R&D team is on hand both in Korea and at locations worldwide. This guarantees that your equipment has been thoroughly tested to cope with the toughest flying conditions.

Our own production facilities in East Asia ensure the quality of the finished product and also the well-being of our production staff. Our facilities are independently certified to AS9100C (Aerospace standard) and also to ISO 9001:2008.

Believe

We believe that the product should speak for itself. Only by flying can the pilot understand the wing and develop trust and confidence in it. From this feeling comes safety, comfort, performance and fun. The grin when you land should say it all!

Manual

Preliminary note: In this manual “flying” is used for the both the terms “flying” and also “riding”.

We recommend that you familiarise yourself with your new speedriding glider by reading this manual before your first flight. This will allow you to acquaint yourself its new functions, to learn the best way to fly the speedriding glider in various situations, and explain how to get the best out of your speedriding glider. Information in this manual on design of the speedriding glider, technical data and illustrations are subject to change. We reserve the right to make changes without prior notification.

This manual complies with the EN 926-1 airworthiness standard and forms part of the certification.

It is comprised of:

1. Manual (this document):
   Instructions on getting started and using the speedriding glider
2. Inspection Information:
   General instructions and guidance on carrying out the regular inspection of speedriding glider
3. Glider details:
   Pilot details , proof of ownership and inspections and repairs overview

This manual was current at the time of publication, and may also be downloaded from the GIN website.

Gin Gliders website

Gin Gliders has a comprehensive website, which provides additional information about the Nano 4, any updates to the manual and many other issues related to speedflying.

www.gingliders.com

On the Gin Gliders website, you will find an extensive range of accessories for your speedriding glider and other useful products.

You will also find links there to other services and websites:

- Gin Gliders Shops
- Facebook, Twitter & youtube

These websites and their content are provided for your use. The content of Gin Gliders websites has been made available for your use on an “as is” and “as available” basis. Gin Gliders reserves the right to alter the websites at any time or to block access to them.

Gin Gliders and the environment

Protection of the environment, safety and quality are the three basic values of Gin Gliders and these have implications on everything we do. We also believe that our customers share our environmental awareness.

Respect for nature and the environment

You can easily play a part in protection of the environment by practising our sport in such a way that there is no damage to nature and the areas in which we fly. Keep to marked trails, take your rubbish away with you, refrain from making unnecessary noise and respect the sensitive biological equilibrium of nature. Consideration for nature is required even at the launch site!

Speedriding is, of course, an outdoor sport – protect and preserve our planet's resources.

Environmentally-friendly recycling

Gin Gliders gives consideration to the entire lifecycle of its speedriding glider, the last stage of which is recycling in an environmentally-friendly manner. The synthetic materials used in a speedriding glider must be disposed of properly. If you are not able to arrange appropriate disposal, Gin Gliders will be happy to recycle the speedriding glider for you. Send the glider with a short note to this effect to the address given in the appendix.

Safety

WARNING: **the safety advice and instructions contained in this manual must be followed in all circumstances. Failure to do so may invalidate the certification and/or result in loss of insurance cover, and could lead to serious injuries or even death.**

Safety advice

Paragliding demand a high level of individual responsibility. Prudence and risk-awareness are basic requirements for the safe practice of the sport, for the very reason that it is so easy to learn and practically anyone can do so. Carelessness and overestimating one's own abilities can quickly lead to critical situations. A reliable assessment of conditions for flying is particularly important. Speedriding gliders are not designed to be flown in turbulent weather. Most serious accidents with speedriding gliders are caused by pilots misjudging the weather for flying.

Independent experimentation is strictly prohibited. This Manual does not replace the need to attend training at a paragliding school. Most ski resorts have special regulations for speedriding gliders. Please inform yourself if you are in a new area and stick to the local rules.

The manual must be passed on to any new owner if the speedriding glider is sold. It is part of the certification and belongs with the speedriding glider.

Observe the other specific safety advice in the various sections of this manual.

Safety notices

Safety notices are issued when defects arise during use of a speedriding glider which could possibly also affect other gliders of the same model. The notices contain instructions on how the affected gliders can be inspected for possible faults and the steps required to rectify them.

Gin Gliders publishes on its website any technical safety notices and airworthiness instructions which are issued in respect of GIN products. The speedriding glider owner is responsible for carrying out the action required by the safety notice.

Safety notices are issued by the certification agencies and also published on the relevant websites. You should therefore visit on a regular basis the safety pages of the certification agencies and keep up-to-date with new safety notices which cover any products relating to speedflying.

Liability, warranty exclusion and operating limitations

Use of the speedriding glider is at the pilot's own risk!

The manufacturer cannot be held liable for any personal injury or material damage which arises in connection with Gin Gliders speedriding gliders. The certification and warranty shall be rendered invalid if there are changes of any kind (incl. speedriding glider design or changes to the brake lines beyond the permissible tolerance levels) or incorrect repairs to the glider, or if any inspections are missed (annual and 2-yearly check).

Pilots are responsible for their own safety and must ensure that the airworthiness of the glider is checked prior to every flight. The pilot should launch only if the speedriding glider is airworthy. In addition pilots must observe the relevant regulations in each country.

The glider may only be used if the pilot has a licence which is valid for the area or is flying under the supervision of an approved flying instructor. There shall be no liability on the part of third parties, in particular the manufacturer and the dealer.

Liability and warranty exclusion

In terms of the warranty and guarantee conditions, the speedriding glider may not be flown if any of the following situations exists:

- the inspection period has expired, or the inspection has been carried out by the pilot him/herself or by an unauthorised inspector
- the pilot has incorrect or inadequate equipment (reserve, protection, helmet etc)
- the pilot has insufficient experience or training

Operating limitations

The speedriding glider must be operated only within the operating limits. These are exceeded, if one or more of the following points are complied:

- the take-off weight is not within the permissible weight range
- the glider is flown in rain or drizzle, cloud, fog and / or snow
- the canopy is wet
- there are turbulent weather conditions or wind speeds on launch higher than 2/3 ot the maximum flyable airspeed of the glider (varies according to the total take-off weight)
- air temperature below -10°C and above 50°C
- the glider is used for aerobatics/extreme flying or flight manoeuvres at an angle greater than 90°
- there have been modifications to the canopy, lines or risers which have not been approved

Glider categories and guidelines

The complexity of the speedriding glider system means that it is not possible to give any more than a partial description of the glider's flight behaviour and reactions to disturbances. Even a small alteration in individual parameters can result in flight behaviour which is markedly modified and different from the description given.

WARNING: The descriptions of flight characteristics contained in this Manual are all based on experiences from the test flights and rides, which were carried out under standardised conditions. No certification test flights were carried out with the Nano 4.

EN/LTF certification

The Nano 4 fulfils the EN 926-1 requirements and test methods for structural strength. It does not have EN 926-2 or LTF certification!

Description of flight characteristics

Speedriding gliders are generally much smaller than normal paragliders. This is why their flight characteristics vary a lot. The Nano 4 is usually flown with wing load higher than 5 kg/m^2, which results in high trim speed and dynamic reactions.

Target group and recommended flying experience

Speedflying is an extreme sport that involves a combination of paragliding and skiing skills. There is high possibility of serious injury or even death if you are unprepared. In particular, the small sizes of the Nano 4 require a lot of skill and experience. On the other hand, the larger sizes are also suitable for training.

Description of pilot skills required

Designed for pilots that are familiar with speedriding gliders, who fly "actively" and regularly, and understand the implications of flying a glider with reduced passive safety. This includes beginners that are under the supervision of a licensed instructor.

Suitability for training

The Nano 4 is generally suitable for use as a training glider only when flown with a low wing loading.

Before the first flight

WARNING: Your instructor, dealer or a specialist must test-fly and inspect the speedriding glider before your first flight. The test-flight must be recorded on the speedriding glider information label. Any changes or improper repairs to this speedriding glider shall render invalid the certification and warranty.

Harness

The Nano 4 should be flown with a speedflying/speedriding harness only. If in doubt about the suitability of your harness, check with the manufacturer of the harness or your speedriding instructor.

It's important for your comfort and safety to fly with a suitable harness that is properly adjusted. When choosing a harness, remember that the height of the attachment points (i.e. distance from the carabiners to the seat plate) affects the sensitivity of the glider and the relative brake travel. The lower (shorter) the attachment points, the more sensitive the glider is to weightshift.

The adjustment of the harness chest strap controls the distance between carabiners and affects the handling and stability of the glider. Excessive tightening of the chest strap increases stability but also the risk of riser twists following glider collapses. It also increases the likelihood of getting collapses due to poor feedback from the glider. The risk of twisting is also strongly influenced by the seating position of the pilot. Flying in a laid back (reclined) position makes it much more difficult to react in time to prevent riser twisting. With the chest strap in a more closed position the glider also has more tendency to maintain a stable spiral. With the chest strap in a more open position, feedback from the glider is increased but stability is decreased. In general, the carabiner distance should not be set too narrow!

GIN speedriding gliders are developed with GIN harnesses, For flight comfort and safety it is very important that you fly with a suitable, properly adjusted harness. In practice, it turns out that few pilots have a harness that suits their flying style and speedriding glider. If you have any questions or doubts regarding the use of your harness with the Nano 4, please contact a GIN dealer or Gin Gliders directly.

NOTE: Don't adjust your leg and shoulder straps too tightly. If you do, you may have difficulty sitting back into your harness after take-off.

Reserve

It is a mandatory requirement to carry an approved reserve for use in emergency situations where the speedriding glider fails and recovery is not possible, for example after colliding with another sports aircraft. In choosing a reserve, you should be careful that you remain within the specified take-off weight. The reserve is fitted according to the manufacturer's instructions.

Weight range

The Nano 4 has no certified wight range and the appropriate size should be chosen according to the pilot's skills. It is important to note that even if the speedriding glider is flown

as a beginner in the weight range, the Nano 4 is still fast and has a dynamic behaviour. Experts are considered very experienced pilots with a competition background.

Size	Nano 4 #9.0	Nano 4 #10.5	Nano 4 #12.0	Nano 4 #13.0
Pilot niveau	**expert**	**advanced**	**intermediate**	**beginner**

WARNING: The higher the wing- loading at which you fly, the more dynamic and demanding the reactions of the glider.

Note: Check your total flying weight by standing on weighing scales with all your equipment packed into your rucksack.

First flight

Carry out your first flights only during stable weather, and in a familiar area or on a training slope. You should steer gently and carefully to begin with so that you can become accustomed to the reactions of the speedriding glider without stress.

Flying the Nano 4

Preparation for launch

Follow a consistent routine every time you fly. This is very important for safety. We recommend the following procedure:

Material check

Check the following condition of your speedriding and other flying equipment before every flight:

- Is the glider fabric free from tears or other damage?
- Are the lines free from knots, tangles or other damage?
- Are the maillons connecting the lines and risers closed and secured?
- Are your carabiners in good condition?
- Are the risers in good condition?
- Is your harness in good condition?
- Are your trimmers in good condition?
- Is your rescue correctly installed?
- Is your rescue handle secure and rescue pin in?

Pre-flight check

A careful pre-flight check is required for any type of aircraft. Make sure that you exercise the same level of care each time carry out the check.

- Once you have arrived at the take-off, you should first take a look at the conditions: observe wind speed and wind direction, airspace, turbulence and thermal cycles.
- Check your speedriding glider, harness, rescue handle and pin, helmet and other equipment.
- Choose a wide starting place, as uniform as possible and free from obstacles.
- Put on your harness and be sure to close the leg straps! Then put on your helmet.
- Place the glider in a curved shape and sort the lines.
- Connect the riser to the harness carabiners. Make sure that the carabiners are closed and that nothing is twisted.
- Check the correct position and symmetry of the trimmers.
- Check one last time that there are no knots in the lines, nothing is twisted and that the lines are not caught in vegetation, rocks or are tangled with your boots or skis. You must be particularly attentive in lighter winds.

WARNING: If there are obvious creases in the glider as a result of tight packing or long term storage, carry out some practice inflations before your first launch and smooth out the trailing edge a little. This ensures that the flow profile is correct during launch. This is particularly important in low temperatures.

5-point check

The 5-point check is carried out immediately before launch to check the most important safety points once again. It should always be carried out in the same sequence so that nothing is overlooked. The 5 points are:

1. Is your personal equipment in order (harness, carabiners, reserve, helmet) and are all straps done up?
2. Is the canopy arranged in a half-moon shape and are all the air intakes open?
3. Are all the lines untangled and are any lines under the canopy?
4. Does the weather, in particular wind direction and strength, allow a safe flight?
5. Are the airspace and launch area clear?

General warnings and advice

Before flying, check the following:

- Are you in good physical and mental condition?
- Are you familiar and compliant with all applicable laws and regulations in your area?
- Are you within your intended weight range?
- Do you have the necessary insurance cover?
- Are you briefed thoroughly about the site, airspace and expected weather conditions of the day?
- Is your equipment and choice of site suitable for your level of experience?
- Do you have a suitable helmet, gloves, boots, eyewear and adequate clothing?
- Are you carrying some form of identification, in case of an accident? Take along a radio and mobile phone if possible.
- Do you fully understand how to safely fly your new wing? If not, have your instructor or dealer explain anything you are not sure about.
- there have been modifications to the canopy, lines or risers which have not been approved.

Golden rules for speedriding gliders

- Assess objective risks!
    - Weather: Never fly if there is a Föhn wind, storm or cold front
    - Avalanche: Check the avalanche bulletin if available. Being prepared in steep slopes means: having avalanche training and tools (Barifox, ABS-System and snow shovel)
- Check your equipment each flight
- Fly only if you feel well. Don’t fly if you are sick, have physical problems or if you drunk too much the night before
- Plan new routes carefully:
    - Check pictures
    - Fly over the new terrain with sufficient height
    - Avoid dead ends

- Your first run should always be a safety run: snow conditions might have changed and there might be rocks visible, while they were covered with snow one day before
- Usually take-offs and landings on ski pistes are forbidden. Ski pistes and infrastructure has to be overflown with sufficient clearance
- You are going faster than you think! Don't risk your life.
- Talk with your buddies. Tell them if they take too many risks or if the weather or avalanche conditions are too dangerous

Launching

The Nano 4 has fast but progressive inflation characteristics with no tendency to hang back or shoot forwards. However, since the Nano 4 is a small glider, the takeoff speed will be very high. It is therefore not recommended to launch in backwind situations or when the take-off area is not free of obstacles. We recommend to take-off only with skis. Take-off with a snowboard is not recommended.

Forward launch

The Nano 4 can be launched without the A-risers. For your first launches, make sure that the trimmers are in the neutral position. The Nano 4 will inflate easily—there is no need to aggressively pull or push the risers at all. As the glider comes above your head, make sure that the canopy is correctly inflated and that there are no knots or tangles in the lines. Check that the airspace and visibility are clear. If everything is in order, move forward decisively off the take-off.

Reverse launch

It is possible to reverse launch the Nano 4, however it is not recommended. Because of the small size, a speedriding glider can be forward launched in relatively high winds. If the wind gets very strong, we recommend to perform a "cobra launch". In order to take-off safely with skies: take the brakes and turn around to face the wing. Pass one set of risers over your head as you turn. Make sure the lines are free from knots or tangles. Check that the airspace and visibility are clear. Gently pull up the glider in an arc. When the glider is overhead, brake it gently if necessary, turn around and launch.

Tips for take-off

- If the glider comes up slightly off-centre, make small corrections by moving towards the lower side.
- Launch the wing by pulling upwards in an arc, not towards you.
- Practice ground-handling regularly to improve your take-off skills!
- The pilot must work actively to keep the glider on the ground in higher winds (wind speeds from approximately 6 m/s), otherwise the glider may rise above the pilot unintentionally.

Note: During reverse launch and ground handling, care should be taken that the brake lines do not rub over the riser. This may cause damage to the riser or brake lines.

Knots or loops in the lines

If you have taken off with a knot in the lines, you should wait until you have enough height and distance from other pilots before you attempt to loosen the knot. Control with weight shift and gently brake the opposite side before attempting to open the knotted side by pulling on the brake line. Make sure you don't fly too slowly and stall or spin the glider. If the knot does not open, land safely as soon as possible.

In-flight characteristics

Normal flight

The brake lines are used to adjust the speed according to the flight situation in order to ensure optimum performance and safety.

"Trim speed" is defined with brakes fully released and trimmers in neutral position while "Slow speed" (brakes pulled 30%, trimmers neutral) offers the best glide and minimum sink in still air.

Stall speed is approached by bringing your hands towards your hips. Notice the decreased wind noise and a significant increase in brake pressure. Be sure not to allow your glider to enter a stall any time!

WARNING: Flying too slowly close to stall speed increases the risk of an unintentional asymmetric or full stall. This speed range should therefore be avoided and used only on landing during the final stage of the flare.

Accelerated flight

Once you have become accustomed to flying the Nano 4, you can practice using the trimmer system, which increases the speed and sink rate a lot. During your first few flights, familiarize yourself with your glider's speed range and corresponding brake positions and pressures.

When flying accelerated the glider reacts much faster to a collapse. Also the glider reacts more radically when a collapse happens during accelerated flight compared to flying at trim speed.

Be sure to be in a stable flight position when you open the trimmers. Apply the trimmer by opening the buckles and letting the trimmer webbing move progressively and symmetrically through. Be careful using the trimmers in turbulence and near the ground.

Turning

Enter a turn with good airspeed, weightshift and then apply the brake. Once established in the turn, regulate your speed and turn radius with weightshift and the outer brake.

Make your first turns gradual and progressive. Also remember that your harness and its set-up has an influence of the turning behaviour of the wing.

If the brakes are applied more, the bank attitude increases significantly and the glider will fly a fast turn increasing in steepness, which will eventually become a spiral dive (further information on this is in the section "Spiral Dive").

Rear-riser control

As any other speedriding glider, the Nano 4 reacts very well on rear-riser input, especially with open trimmers. For hook turns, we recommend to use the rear-riser.

WARNING: Rear-riser control should not be used in strong turbulence. In this case, close the trimmers and fly the glide actively with the brakes.

Active flying

Practice active flying to eliminate collapses in all but the most turbulent conditions.
Keep tension on the brakes approximately equal to the weight of your arms. This allows you to stay relaxed and sensitively feel the internal pressure in the wing through the brakes. If you feel a loss of pressure in one or both sides of the wing, quickly apply the appropriate brake(s) to regain pressure. Release the brake promptly as soon as normal pressure is resumed.

If you miss the above timing and get a collapse, be sure to first raise your hands and release the brakes before considering any other corrective actions.

The Nano 4 has excellent pitch stability. Nonetheless, in turbulence or during manoeuvres, the glider may pitch. If the glider pitches in front of you, apply brake to slow it down. If the glider drops behind you, ease off the brakes to allow it to speed up. The objective is to reduce the pendulum effect by adjusting the speed of your glider so that glider and pilot are travelling at the same speed.

The same general principles also apply when gliding with open trimmers.

Summary: "Active flying"

- The pilot sits upright in his harness, his view goes in the direction of the flight.
- He constantly responds to increasing and decreasing brake pressures with the aim of maintaining a constant pressure on the brake lines.
- The further in front of you the glider pitches, the larger the brake input required, but for a shorter duration.
- When brake pressures decrease, brake firmly; when brake pressures increase, ease off the brakes.

WARNING: Never release the brakes when the glider is behind you but accelerating forwards.

Rapid descent techniques

Some flying situations call for a very rapid descent to avoid a dangerous situation, e.g. the up current from a cumulus cloud, an approaching cold front or a storm front.

Rapid descent methods should all be practised in calm conditions and at sufficient altitude so that a pilot is then able to employ them effectively if extreme conditions arise. Rapid descent techniques are divided into three different manoeuvres which increase the sink rate in a safe and controllable manner. For the Nano 4 we recommend only spiral dives as Big ears and B-stall are not appropriate for speedriding gliders.

Always try to avoid the need to use descent techniques. Thoroughly check the conditions before launch, and pay close attention to how the day develops.

Spiral dives

The spiral dive is the most effective method for making a rapid descent, and can allow sink rates over 30 m/s. Spiral dives attain higher rates of descent, but the g-forces can be significant and the manoeuvre is technically demanding.

Before entering a spiral, make sure you have adequate height for recovery. To enter the spiral dive, weight shift and progressively apply the inside brake until the glider enters the spiral. As the glider accelerates into the spiral, centre your weight and control your rate of descent with weightshift and outer brake.

To exit the spiral, check your weight is centred (or slightly towards the outside) and progressively release the inside brake. As the glider starts to exit the spiral, you may also choose to reduce the pendulum moment by briefly re-applying the inside brake. Be aware that the skis on your feet add momentum to your body and that there is a higher risk for twists in abrupt turns.

Deviations from the carabiner distance, unapproved harnesses or spirals with excessive sink can change the maneuver considerably; pilot action may be required. In such cases, exit the spiral by weightshifting to the outside and progressively applying the outside brake.

WARNING: In the spiral dive, very high turn speeds can be reached with an increase in acceleration due to gravity (up to over 6g), so exercise care when attempting this manoeuvre. Take note of the following:

- **The high g-forces experienced in steep or prolonged spirals may result in disorientation or even loss of consciousness.**
- **Always maintain ground clearance of 150 – 200m. The manoeuvre must be exited at this height above ground.**
- **Do not attempt to enter a spiral dive while in big ears. This places excessive forces on the speedrider and may result in structural failure.**
- **Frequent steep spirals may cause premature aging of your wing.**
- **Due the small size of the Nano 4, height loss in spirals is significant.**

WARNING: You must immediately deploy your reserve if you lose control of the glider and the sink rate and find yourself in a stable spiral. The high g-forces in the spiral may rapidly lead to a loss of consciousness which prevent later deployment of your reserve.

B-Stall

Big ears are not recommended with the Nano 4.

Big ears

B-Stall is not recommended with the Nano 4.

Landing

Land on a large and obstacle-free landing site. Observe the wind direction and strength, and any hazards in, or near the landing area.

Fly a proper landing circuit and plan your final approach well in advance. Never perform steep turns near the ground. This may cause the pilot to pendulum dangerously.

Actively choose a spot on the ground in the landing field to aim for. Adopt an upright position in your harness by sliding your legs forward, ready to make contact with the ground.

Make your final approach as straight as possible. Fly at around trim speed (keep just enough tension on the brakes to keep contact with the wing, a little more tension in turbulent air). Once you come within a metre of the ground, brake progressively to maintain a level flight path.

In nil or light winds, flare positively to reduce your ground speed to a minimum. Again: higher wing loading results in a higher ground speed. Make sure you always land into the wind. In nil wind situations, be prepared to touch down fast. In stronger winds, use only the minimum amount of flare necessary to sufficiently minimize your vertical and horizontal speed. If you flare too hard in strong winds, the glider will climb rapidly upwards and backwards, and you may get injured.

In strong winds, turn to face your wing as soon as your skies touch the ground. Immediately stall the glider as rapidly as possible with the brakes or rear risers. Be prepared to get towards your wing.

NOTE: The Nano 4 has a high basic speed and excellent energy retention. Give yourself enough space and bleed off speed gradually before flaring.

WARNING: Although the Nano 4 is remarkably maneuverable even in the lower half of the brake range, do not be tempted to make an excessively slow landing approach. Strong gusts and/or a steep wind gradient may cause any glider to suddenly lose altitude, or even stall.

Never let the leading edge crash to the ground, you risk damaging the seams and/or internal structure.

Ground handling (especially on rough surfaces) will accelerate the ageing process of your wing.

Range of use

The Nano 4 was developed and tested for use solely as a speedriding glider for ski launch. Any use other than as intended is prohibited.

Towing

The Nano 4 is not intended for towing.

Paramotoring

The Nano 4 is not intended for paramotoring.

Tandem paragliding

The Nano 4 is not intended for tandem paragliding.

Aerobatics

Your Nano 4 was not developed or tested to be used for aerobatics (acro). By engaging in such an activity, you voluntarily assume an increased risk of injury or death.

Any type of acrobatic manoeuvre at all on the Nano 4 is contrary to law and illegal. The pilot would be putting his/her life at risk. Acrobatics involves a risk of unpredictable flight attitudes, which could lead to damage to material and structural failure.

Dangerous situations and extreme flying

Dangerous situations

Pilot error, extreme wind conditions or turbulence which goes unnoticed by the pilot for too long may leave the wing in an unusual flying position, requiring special reaction and skills on the part of the pilot.

Ground-training is a safe and effective method of familiarising yourself with your glider's reactions. Launch can be practised, as can small flying manoeuvres, such as stall, asymmetric collapse, front stall etc.

Any pilot who flies in turbulent conditions or who makes an error in handling the glider is at risk of getting into an extreme situation. All of the extreme flight figures and flight attitudes described here are dangerous if they are carried out with inadequate knowledge, without the right safety altitude or without training.

Always keep within the recommended limits. Avoid aerobatics and extreme loading such as spirals. This will prevent accidents and avoid overloading the glider.

In turbulent conditions, always keep enough distance from rock faces and other obstacles. Time and sufficient altitude are needed to recover from extreme situations.

WARNING: Deploy your reserve if the corrective manoeuvres described in the following sections do not return the glider to a controllable flying position or if there is not enough altitude for correction.

SIV / Safety training

SIV / safety training is not recommended with the Nano 4.

Material stress

Uncontrolled flight positions may occur which are outside the manufacturer limits of the speedriding glider. This may cause premature ageing, or even structural failure.

Stretching of the lines and/or canopy material after safety training can lead to a general deterioration in flight characteristics.

Damage as a result of safety training is not covered by the warranty.

Canopy Collapses

Asymmetric collapses

Asymmetric collapses are caused by the stagnation point moving to the trailing edge of the glider. A negative angle of attack makes part of the canopy collapse and tuck under, and the glider may plunge down, turn away or spin.

Use active flying techniques to virtually eliminate collapses in normal flying conditions. Nevertheless, if you do get a collapse, stabilize your weight in your harness and do not allow yourself to fall to the collapsed side. Control your course with weightshift and a little outside brake. The deflation should re-inflate spontaneously.

If the deflation does not re-inflate spontaneously, apply brake on the closed side in a smooth, progressive pumping action. Be sure not to apply too much brake too slowly as this may risk a stall. Remember that a partly collapsed wing has a reduced surface area and thus a higher stall speed.

If you get a collapse while in accelerated flight, close the trimmers immediately. Then apply the normal procedure for unaccelerated asymmetric collapses.

WARNING: After a large collapse, an instinctive reaction to the body falling is to attempt to hold something. This can result in the pilot unintentionally applying brake, which prevents proper recovery. Always make sure you have fully released the brakes (including any wraps taken) after any incident. Let the glider fly.

Cravat / glider wrapped around lines

A cravatte occurs when a wing tip becomes stuck between the glider lines, for example, following a bad take-off preparation. On the Nano 4, a cravatte is unlikely to occur. If you do get a cravatte, first control your direction. Do this by using weightshift and enough counter-brake to stop the turn, but not too much to risk a stall of the opposite side.

A cravat can generally be opened by a short, fast pull on the brake line of the cravatted side. If not, on the Nano 4, there is a separate stabilizer/winglet main line that goes down to the A2 riser. This line usually becomes slack in the event of a cravat. Pull this line down completely until it becomes tight and the cravat normally comes out.

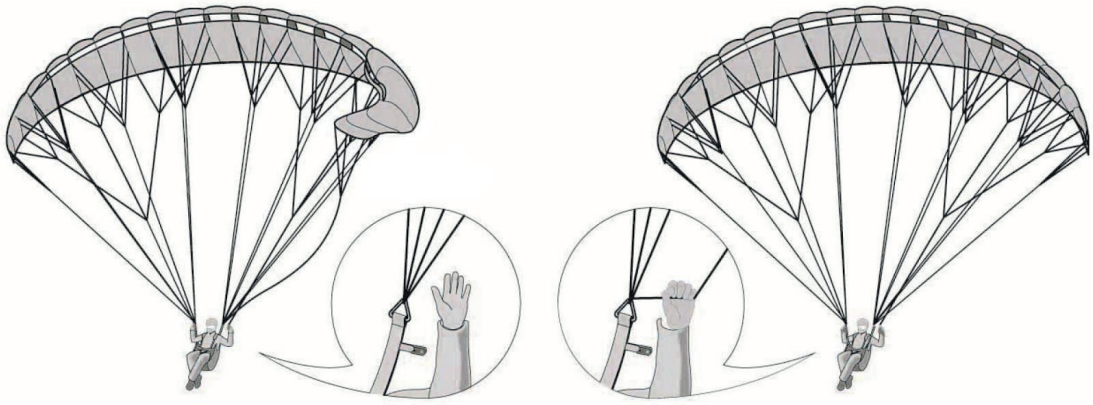


Figure: Grabbing the stabilizer/winglet main line

WARNING: Counter-steering too strongly on the inflated side of the glider can result in a stall and to further uncontrolled flight manoeuvres (cascade of events).

Always remain aware of other aircraft and terrain when dealing with a problem on your wing. Do not hesitate to throw your reserve parachute if the rotation in a cravatte is increasing uncontrollably, especially if you are at low altitude.

Symmetric collapses (Front stall)

A negative angle of attack can also cause part or all of the leading edge of the glider to collapse.

Symmetric (frontal) collapses will normally re-open without pilot input. The speedrider will pitch forward and then regain speed. Assist this process if necessary with a symmetric application of the brakes. Take care not to apply too much brake for too long as this may stall the wing.

In the case of extreme front stalls across the entire wing chord, the wing tips may move forward making the glider form a U-shape. Again, recovery is by light symmetrical braking on both sides. Take care that both wingtips return to normal flight evenly.

WARNING: If you get a collapse while in accelerated flight, close the trimmers immediately. Then apply the normal procedure for unaccelerated symmetric collapses.

Types of stall

When a speedriding glider flies through the air, a laminar and turbulent boundary layer is created. Extremely dangerous flight configurations can result if the laminar boundary layer is interrupted, with practically the entire airflow along the top surface breaking away. This happens in particular when the angle of attack is too great.

WARNING: Full stall and spin are manoeuvres which can be fatal if recovery is not correct. These manoeuvres should therefore be avoided. However, it is important to learn how to recognise the indications that a glider is about to stall so that you can take immediate action to prevent it.

There are three different types of stall in paragliding.

Deep stall (parachuting, stable stall)

Speedriding gliders can go into a deep stall for a variety of reasons: brake lines too short (no slack), old or damaged glider material which therefore has increased level of permeability, altered trim/line length and changes to profile characteristics caused by moisture (e.g. flying in rain).. An out-of-trim glider, caused by changes in line lengths due to prolonged use, may also have a higher deep stall tendency.

In a deep stall, the airflow from the front reduces and the glider goes into a stable flight attitude without forward momentum. The speedrider sinks almost vertically at high speed and there is noticeably less flight noise.

The Nano 4 has no tendency to get into in a deep stall. Should this nevertheless occur, make sure your brakes are fully released, the glider will then normally recover on its own immediately. If the glider still doesn’t recover either put your hands on the A risers and push forward.

You can also open the trimmers to accelerate, so that the glider goes into a normal flying position from the deep stall. After you have landed, the glider and the length of the lines must be checked.

You can recognise a deep stall by the glider getting "mushy" and the airflow around your ears decreasing. The glider may also compress spanwise. Flying in strong turbulence or exiting a deflation with too much brake applied can cause this situation. A wet glider also has a higher deep stall tendency, and you should do everything you can to avoid flying in the rain. If you do pass through some rain never make big ears! Open the trimmers until you are confident that the wing has dried out.

WARNING: Never apply the brakes, including any wraps taken, in a deep stall.

Full stall (dynamic stall)

The full stall happens when the wing partially deflates and loses its arched shape. It is triggered when the maximum possible angle of attack is exceeded. The most common cause is going below the minimum speed or flying near the minimum speed combined with the effects of turbulence.

In full stall, the speedriding glider loses its forwards travel, 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 approx. more than 20m/s.

WARNING: Never fly stall or full stall with the Nano 4.

Spin

The spin is a stable flight maneuver, in which one side of the canopy stalls, while the other side continues to fly forward. The glider turns around the stalled side of the wing.

WARNING: Never fly spins with the Nano 4.

Other tips for dangerous situations

Cascade

Many reserve deployments are a result of a cascade of over-corrections by the pilot. Please note that over-corrections are often worse than no input at all.

Emergency steering (rear riser steering)

If for some reason the brake lines are not working, e.g. if the knot on the brake handle has come undone or a brake line is defective, the Nano 4 can also be steered and landed using the rear risers.

In this case, stall happens more quickly and the pilot must compensate for the changed flight behaviour by pulling carefully on the risers.

Flying in the rain

We strongly advise you not to fly in the rain on any speedriding glider including the Nano 4. If you do fly in the rain, be aware that you will have a greater risk of entering a deep stall. It is wise to open the trimmers after passing through rain until you are confident that the glider is flying normally, and has preferably dried out so that there is no longer any risk of deep stall.

Flying in extremely humid weather or in rain is outside of the operating limits of the glider. If you are unable to avoid flying in rain, please observe the following:

- it is advisable to fly with slight acceleration during and after the rain (min. 30% or more)
- use no brake input or as little as possible
- control travel reduces
- avoid tight turns, especially in the final approach. If conditions allow, you should also fly slightly accelerated in this phase
- avoid large angles of attack and the possible early stall near the ground (release the speed bar only slowly

Advertising and adhesives

Always make sure before attaching advertising to the glider that the adhesive planned will not alter the glider's flight behaviour. If you are in doubt, we recommend that you do not attach the adhesive. Attaching adhesives to the glider which are large, heavy, or made of unsuitable material may result in revocation of the certification.

Overloading

The glider structure is put under high levels of strain in particular on extreme flight manoeuvres, rapid descent methods (spiral dives) or prohibited aerobatic manoeuvres. They considerably accelerate the aging process of the structure and should therefore be avoided. The glider must be inspected earlier than is usually the case if it has been put under more than the usual degree of strain.

Sand and salt air

In many cases, sand and salt air cause the lines and fabric to age much more rapidly. If you often fly near the sea, the glider should be inspected more frequently than normally required.

Temperature range

Temperatures under -10 °C and over +50°C can make the speedrider unfit to fly. The manufacturer's warranty will lapse if the glider is used outside of this temperature range.

Storing, care, maintenance and repairs

Storing the speedriding glider

Packing the glider

When the Nano 4 is packed between runs, we suggest storing it in the special Gin Gliders speedflying packing bag. Check out www.gingliders.com for the latest models. This bag is specially designed for this purpose. The packing is fast, avoids stress on the reinforcements and the lines or the glider can not get tangled in the cable car.

If you store the Nano 4, it can be packed with all the usual methods. Make sure that there is no snow in the canopy. To ensure a long life of the profile reinforcements it is very important that you pack the speedrider carefully. It is therefore recommended that you pack the Nano 4 as shown in the following illustrations.

The leading edge reinforcements (Mylar and Rigifoil system) on the front edge are placed on top of each other to avoid bending or misshaping them. This method of packing ensures that the leading edge is treated carefully, which will increase the glider's life, performance and launch behaviour.

If the reinforcements have been bent or misshapen, they distort more easily during flight, creating an altered air inflow which can lead to a loss in performance and changes in flight behaviour. The leading edge reinforcements also perform an important function on launch. Therefore, the less they have been bent, the more easily the glider will inflate and launch.

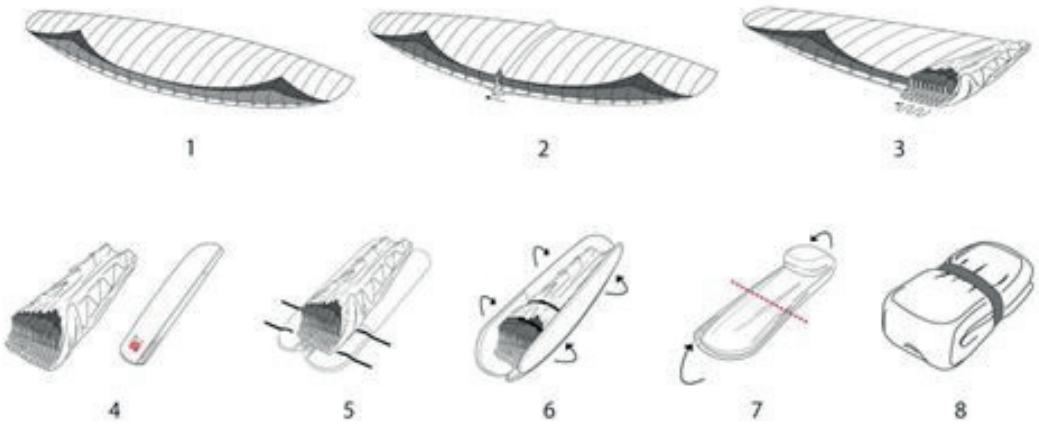


Figure: Packing the Nano 4

1. Spread out the speedrider completely on a smooth surface. Do not drag the speedrider across any rough surfaces such as gravel or asphalt. This may damage the seams and surface coating.
2. Start from the center to stack the profiles of each side of the wing on top of each other.
3. Proceed like this until the wing tip. All the ribs on one side are placed one on top of one another, so that the leading edges are not bent.
4. Then continue as in the second step, placing the leading edges of the other side on top of the next until you reach the tip of the glider. Place the concertina bag

underneath the glider which has been folded together, so that the ribs are all lying along the length of the concertina bag.

5. The glider is now folded up along its length, and the leading edges are on top of each other without having being bent. Fasten the straps near the leading edges, so that they do not slip, and the straps in the middle and at the end of the glider.
6. Do up the zip, making sure that none of the lines or fabric is caught in the zip.
7. Fold up the glider along its length, with the first fold below the leading edge reinforcements. Pay particular care not to bend any of the rigid reinforcements!
8. Fold the glider again. Then place the compression strap around the glider and fasten it by pulling gently. Make sure that the glider is only loosely folded and is not bent or compressed excessively.

Storing and transporting the glider

Even if your speedrider was completely dry when it was packed up after the final flight of the season, for long-term storage you should if possible take it out of the backpack and spread out the canopy a little in a clean, dry place away from direct light. If you do not have the space to do this, then open the backpack, internal bag and belt as much as possible and avoid compressing it. It must be stored at a temperature between 10° and 25° C and in relative humidity between 50 and 75%. Make sure too that the speedrider is not stored in a place where animals such as mice or cats could use it as a place to sleep.

Do not store the speedrider near any chemicals. Petrol, for example, causes the material to disintegrate and can cause considerable damage to your speedrider. When your equipment is in the car boot, keep it as far away as possible from any spare petrol cans or oil containers.

The Nano 4 should not be exposed to extreme heat (e.g. in the boot of the car during summer). The heat may cause any moisture present to be pressed through the fabric, thereby damaging the coating. High temperatures accelerate the process of hydrolysis, particularly when combined with moisture, which damages fibres and coating. Do not store your speedrider near radiators or other heat sources. Always transport your glider in the special concertina bag and use the backpack provided for the rest of the equipment.

Care

The materials used in the Nano 4 have been carefully selected for maximum durability and performance. Nevertheless, following the guidelines below will keep your speedriding glider airworthy and will ensure a long period of continuous safe operation. Excessive wear is caused by careless ground handling and packing, unnecessary exposure to UV light, chemicals, heat and moisture.

Ground handling

The following should be avoided:

- Don’t ground handle or take-off on abrasive surfaces.
- To move the glider to another spot, don’t drag it across the ground. Pick it up and carry it.
- Violent shocks to the upper surface (e.g. when the canopy crashes to the ground leading edge first whilst ground handling). This stresses the seams and can even cause the cell to explode.
- Don’t repeatedly inflate the glider and allow it to crash back down. Step towards the wing as it comes down to take the force out of this action.
- Dragging the glider along the ground.
- Stepping on the lines or canopy. The Kevlar line inside the sheath can take lots of pulling force without stretching, but is sensitive to bending with small radius.
- Opening your wing in strong winds without first untangling the lines.
- Don’t sit on your rucksack when your glider is packed inside.

Fabric

Care is essential to ensure that the fabric and glider remain durable and retain their qualities. The glider should therefore be protected from unnecessary UV light. Do not unpack your glider until immediately before flight and pack it up straight after landing. Modern speedrider fabrics have better protection against the sun, but UV rays in particular are still one of the decisive factors in how the fabric ages. The colours will fade first and then the coating and fibres will begin to age.

When choosing a place to launch, try to find somewhere which is smooth and free of stones and sharp objects. Do not stand on the glider. This weakens the fabric, especially if it is on a hard or stony surface. Pay attention to the behaviour of spectators at the launch site, especially children: do not hesitate to draw their attention to the sensitive nature of the fabric.

When you are packing up your glider, make sure that there are no insects trapped inside. Many insects produce acids when they decompose, which can cause holes in the fabric. Grasshoppers make holes by biting through the fabric and also excrete a dark liquid which stains. Keep animals away when you are packing up. Insects are not attracted by any particular colours, contrary to what is commonly believed.

If the glider gets wet or damp, it should be dried as soon as possible in a well-ventilated room (but out of the sun). It may take several days before the canopy has dried completely because the fibres absorb water. Mould may form if the speedrider is stored wet and the fibres may rot, particularly when it is warm. This can make the speedrider unsuitable for flying within a short time.

A brand-new glider will often be compressed when delivered. This is solely for the initial delivery and the glider should not be compressed in such a way again. Do not pack your glider too tightly after use and, even though it is very comfortable, never sit on the backpack with the glider inside.

If salt water gets on the glider, it should be rinsed immediately in fresh water (refer to the section “Cleaning”).

Lines

The Nano 4 has various different high-quality and accurately manufactured lines which have been selected according to the load and area of use. You should also protect the lines from unnecessary UV light because, as with the fabric, UV light in particular will weaken the lines.

Dyneema lines for example, are very temperature-sensitive and can be permanently damaged at temperatures above 75° C. Therefore your glider should never be stored in a hot car especially during summer.

Be careful that there is no abrasion caused to the coating on the lines by rubbing, particularly when ground-training with crossed risers.

Do not walk on the lines after the glider has been spread out and watch out for spectators or skiers who may inadvertently go over the lines.

When you are packing up the glider, be careful to avoid putting any unnecessary kinks in the lines and use only the overhand knot or bowline knots described for the brake lines.

Rigid construction

Various forms of plastic rods are used in the Nano 4 (rigid construction), which help maintain the shape of the leading edge and the stability of the canopy. To ensure that the plastic rods keep their shape, it is important that you pack the glider as described in the section “Packing the speedriding glider”.

The plastic rods on the Nano 4 can all be replaced through small pockets. If you notice that a plastic rod has been damaged or misshapen because of incorrect use, this can be replaced by Gin Gliders or a Gin Gliders authorised workshop.

Cleaning

If you do have to clean the glider, use only lukewarm fresh water and a soft sponge. Use a weak soap solution for stubborn stains, and then rinse it out carefully and thoroughly. Leave the glider to dry in a place which is well-ventilated and in the shade.

Do not under any circumstances use chemicals, brushes, rough cloths, high-pressure cleaners or steamers to clean the glider, as these can damage the fabric coating and weaken it. The glider becomes porous and loses breaking strength.

Do not under any circumstances put the glider in the washing machine. Even if washing powder is not used, the glider would be badly damaged by the mechanical action of the machine. Do not put the canopy into a swimming pool - chlorine will damage the fabric. If you have no choice but to rinse the glider, e.g. following a landing in the sea, gently wash it down inside and out with fresh water. Frequent rinsing accelerates the aging process.

Maintenance

Type designation

GIN gliders have an exact identification on the underside of the wingtip or on the centre rib, which is obligatory for all speedriding glider. The information required is set out in the airworthiness requirements.

It is helpful to provide the type designation of the speedrider if you are contacting your Gin Gliders dealer with any queries or ordering replacement parts or accessories, to ensure accurate identification.

Regular inspections

The following parts and materials must be inspected regularly for damage, abrasion and correct operation, e.g. after landing:

- Risers and quick-links
- Lines
- Fabric

Lines

Measuring the length of the lines is part of the regular speedrider inspection. The lines must be measured with a load of 5kg, in order to ensure reproducible results for a comparison with the lengths in the check sheets.

The lines have a considerable influence on flight behaviour. Correct line length and symmetry are also important for performance and handling. Gin Gliders therefore recommends an inspection every 50 to 100 hours or once a year.

Environmental conditions such as high temperatures or moisture can affect line length. Check the line length regularly, particularly if you notice any change in launch or flight behaviour. The line length should be checked if you have landed in water or if the lines have got wet through. Lines age and lose strength even if the speedrider is used infrequently or not at all. This can affect the safety and function of your speedrider.

Signs of wear are slight bumps or changes in flying characteristics. The lines must then be replaced immediately. Use only inspected and approved lines, which can be obtained through Gin Gliders.

WARNING: A damaged line can result in loss of control of the glider. Always replace lines which are damaged. If you need to replace damaged or worn-out parts, use only original parts or approved parts from the manufacturer.

WARNING: Do not under any circumstances use knots to shorten the lines. Any knot will weaken the line considerably and may cause the line to break in case of high load. The overhand knot and bowline knots described are permitted only for connecting the main brake lines/brake handle.

Inspection periods

Failure to observe the inspection periods shall render invalid the certification and warranty. A properly completed logbook with details of all flying and training will help you to comply with these periods.

A qualified professional should perform a formal maintenance inspection no later than

36 months after the first flight or after 200 hours (including ground handling), whichever is sooner. Subsequent inspections should be carried out every 24 months or 150 hours (including ground handling), whichever is sooner.

Ground handling time must be at least doubled when calculating the total hours of use because of the increased wear and tear on the glider. If you ground handle frequently or fly in harsh conditions, we recommend an annual check. It is your responsibility as a pilot to ensure that your wing is airworthy at all times.

For gliders used in training, an inspection must be carried out every 12 months from the date of purchase.

A full inspection will give you peace of mind and extend your glider's lifetime. Additional inspections should be performed by a qualified person following a crash or violent landing on the leading edge, or if you note a deterioration of performance or behaviour.

Service and repair shops authorized by Gin gliders are in possession of the Gin Gliders service instruction, which contains all the necessary procedures, equipment and additional technical information about the Nano 4, such as single line lengths, sewing and further material and processing guidelines.

Validity of inspection

It is very important that your glider is serviced at the required intervals throughout its entire life. In order to benefit from Gin Gliders warranty:

- You must have your speedriding glider inspected by Gin Gliders or an inspection agent authorised by Gin Gliders.
- The documentation and the result of the inspection must be clearly identifiable (date and place / name of the inspector) and be entered near the glider information/certification sticker.

Inspection by the pilot

Under § 14 para. 5 of the German Aeronautical Products Investigation Order (LuftGerPV), pilots in Germany are able to carry out the inspections themselves or appoint a third party to do so (e.g. manufacturer/importer), provided that the requirements are all fulfilled. However, if this is done, the liability and warranty of Gin Gliders will lapse.

The DHV recommends that inspection is carried out by the manufacturer/importer or by an authorised inspection agent .

Repairs

Gin Gliders workshops

All repairs and servicing should be carried out by a Gin Gliders authorised workshop or directly by Gin Gliders. Gin Gliders workshops have trained staff, original Gin Gliders parts and the necessary know-how, all of which will ensure top quality.

Major repairs at the Nano 4, such as replacing panels, should only be carried out by the distributor or manufacturer.

Small repairs to the glider

Very small holes in the sail can be repaired with the sticky back tape provided with your glider. Damaged lines should be replaced by your GIN dealer. Before fitting a replacement line, check it for length against its counterpart on the other side of the wing. When a line has been replaced, always inflate the glider on flat ground to check that everything is in order before flying.

WARNING: Do not attempt to perform repairs unless you have the knowledge, experience, materials and tools needed to do the job properly.

GIN quality and service

We take pride in the quality of our products and are committed to putting right any problems affecting the safety or function of your equipment and which are attributable to manufacturing faults. Your GIN dealer is your first point of contact if you have any problems with your equipment. If you are unable to contact your dealer or GIN importer, contact Gin Gliders directly via our website.

Dimensions, illustrations, technical and EN/LTF data

Introducing the Nano 4

The original Nano was the first ever speedriding wing in 2005, introducing thousands of pilots to the sport of speed riding.

The Nano 4 retains the accessible philosophy of the Nano, whilst going further in terms of handling and performance. The Nano 4 is easy to inflate, solid and stable in flight and offers a progressive and precise reaction to your control inputs. With a new profile, internal structure and line configuration, the Nano 4 has greater energy retention and a bigger dive. The glide is improved, and the longer trim allows a higher max speed. With trimmers open, steeper lines are possible. Although the largest sizes can be flown by beginners, the smaller sizes can provide experienced riders and pilots a truly adrenaline filled experience!

The Nano 4 is result of an international collaborative effort of our designers and test pilots. The wing was designed by Adrian Hachen, Torsten Siegel and Gin Seok Song, and tested by Tim Bollinger and Aaron Durogati.

Delivery

Make sure your dealer has checked and test-flown the glider. Your glider will be delivered to you with the original trim settings which correspond to the tested configuration. Do not make any modifications, such as changing the risers or altering the line lengths. This would invalidate the certification and is potentially dangerous.

NOTE: Your glider may have been delivered with some lines looped on the maillons, this is to allow the glider to be re-trimmed during a professional check at the recommended service interval.

Manufacturing

All GIN gliders are produced in the company's own facilities using the most modern techniques. Highly skilled staff take extreme care during the entire manufacturing process. Stringent quality control is made after each step, and all materials that go into each wing can be traced. These measures guarantee that pilots fly with the assurance that their wing meets the most exacting safety standards.

Overall illustration

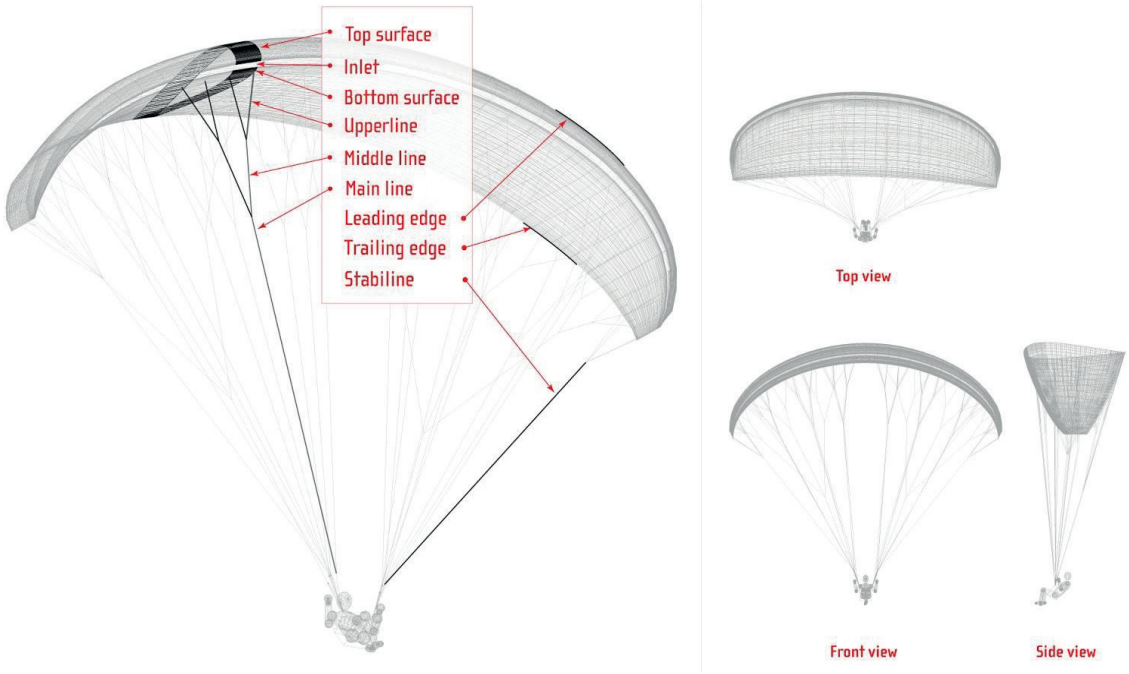


Figure: Overall Illustration

Technical data

Size	**9**	**10.5**	**12**	**13.5**
Area (flat) [m^2]	9.00	10.50	12.00	13.50
Area (projected) [m^2]	7.74	9.03	10.31	11.60
Span (flat) [m]	5.77	6.23	6.66	7.07
Span (projected) [m]	4.70	5.08	5.43	5.76
Aspect ratio (flat)	3.70	3.70	3.70	3.70
Aspect ratio (projected)	2.86	2.86	2.86	2.86
Cells	19	19	19	19
Glider weight [kg]	2.25	2.45	3.65	2.85
Pilot level	expert	advanced	intermediate	beginner
EN/LTF	EN 926-1	EN 926-1	EN 926-1	EN 926-1

Riser and speed system

Riser

The specially developed riser for the Nano 4 allows the pilot to adjust the speed behaviour of the Nano 4.

Riser diagram

Figure: Nano 4 riser

Riser lengths

Riser lengths [mm]	A	Stabilo A	B	Stabilo C
Length at trim speed	550	550	550	550
Length at full speed	550	550	630	630

Speed System

The Nano 4 already has a high basic trim speed, but this can be increased considerably by using the additional trimmers. It is particularly useful if there is a strong headwind or to leave a dangerous area quickly.

The speed system accelerates the wing by progressively shortening the risers towards the front. This decreases the canopy's original angle of attack and the speed of the glider increases.

WARNING:It is generally strongly recommended to close the trimmers in turbulent areas and when flying close to the ground, because of the increased risk of collapse.

Line system, brakes and line plan

Line system

The Nano 4 has A/B and C/D line levels, which fork two or three times from the bottom (riser) to the top (canopy) and which are divided into "Main", "Lower-Middle", "Higher-Middle" und "Top" lines. The individual line levels are connected with one another using the "handshake knot" (special hoop technology).

With the brake lines, the individual levels are bundled at the end with the main brake line. This runs through the brake ring (or pulley) attached to the riser and is knotted at the brake loop of the control handle. There is a mark on the main brake line which allows the control handle to be correctly positioned.

The main A and B lines are all attached to Maillon quick links. They are fed through special elastic rings (or plastic clips) and attached to prevent the lines from slipping and to ensure that they sit in the correct position.

Brake line adjustment

Factory setting

The brake lines of the Nano 4 are set to the length that was used for the EN certification test flights. These line lengths have been finely tuned by the GIN test pilots, and it should not be necessary to adjust them.

The brake line length is tuned so that there is slack in the brake lines when the glider is in fully accelerated flight. Therefore, the brakes are quite slack at trim speed, and to take up that slack in soaring flight, it is common to fly with half a wrap on the brakes and hold the handles on the knot. However, care should be taken to release the wraps in any extreme situation.

If you do need to make adjustments to suit your harness, body and flying style, we strongly recommend that you test fly the glider after every 2 cm of adjustment. There should be a minimum of 10 cm of free brake travel when the glider is flown hands-off. This prevents the brakes being applied unintentionally when the speed system is fully engaged. We recommend a double sheepshank or a bowline knot for the brake handle attachment as shown in the diagram.

Figure: Bowline knot

WARNING: Loose, unsuitable or incorrectly tied brake line knots can cause the main brake line to loosen and then lead to loss of control of the glider.

Incorrect adjustment

If the brake lines are too long, the speedriding glider reacts slowly and is difficult to land. The brake lines can be adjusted during flight by wrapping them around your hands which will improve the flight characteristics. Adjust the brake lines to the correct length after you have landed. Changes to the braking distance should always be made in small increments of no more than 2 to 3cm and must be tested on a training slope. The left and right brakes must be adjusted symmetrically.

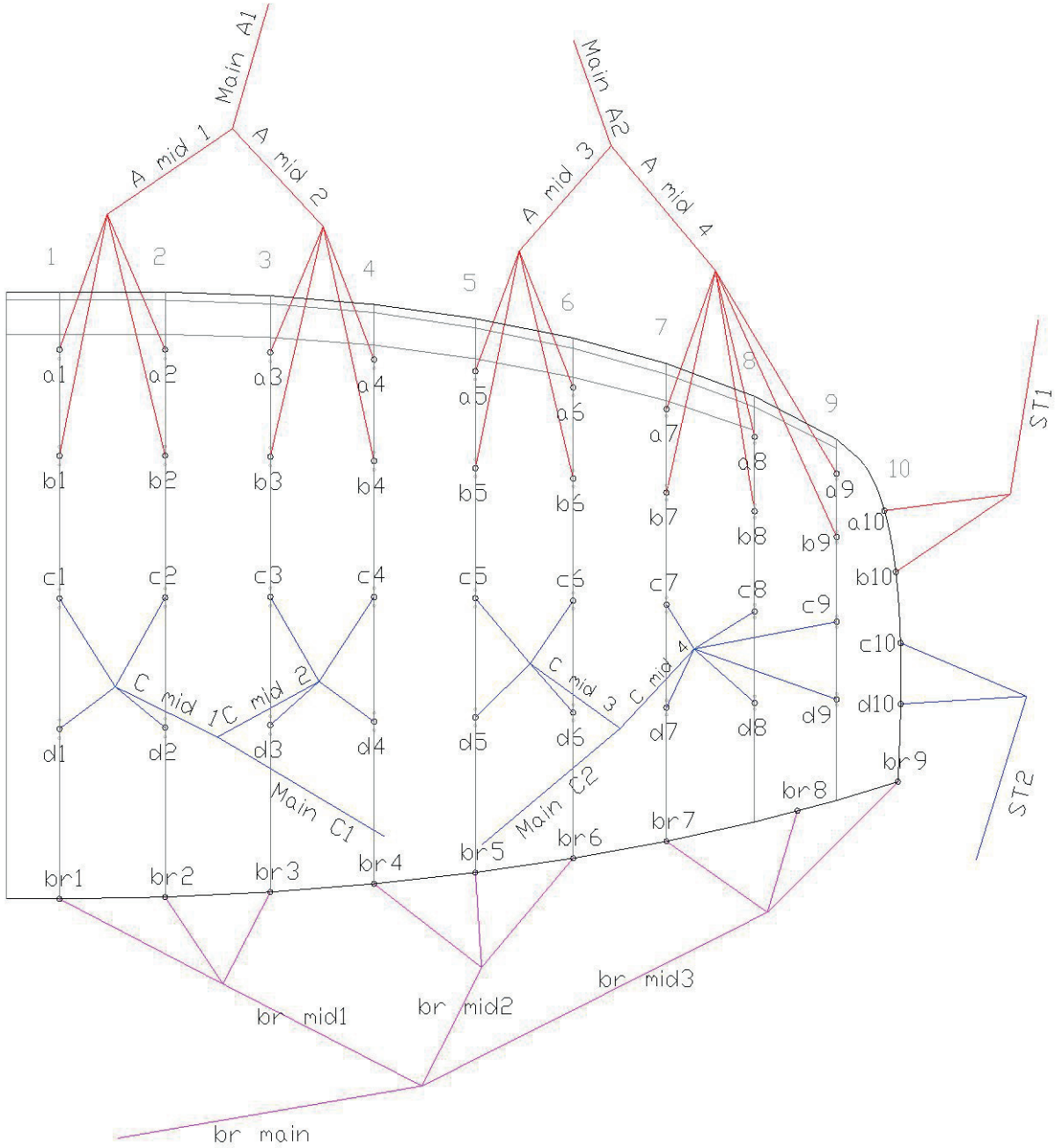
If the brakes are shortened, care must be taken that the speedriding glider is not slowed down in trim and accelerated flight. Safety issues may arise and performance and launch behaviour may deteriorate if the brake lines are shortened too much.

If the brake lines are too short, the following risks could arise:

- there could be an early stall
- the glider does not launch well and there is a risk of deep stall
- the glider exhibits dangerous behaviour in extreme flying
- the trailing edge of the glider is braked in accelerated flight which, in an extreme case, could cause a frontal collapse

WARNING: Environmental conditions can also lead to the brake lines shortening. You should therefore check brake line length regularly, particularly if there is any change in launch or flight behaviour.

Line layout


Main A1
A mid 1
A mid 2
Main A2
A mid 3
A mid 4
1
2
3
4
5
6
7
8
9
10
ST1
ST2
a1
a2
a3
a4
a5
a6
a7
a8
a9
a10
b1
b2
b3
b4
b5
b6
b7
b8
b9
b10
c1
c2
c3
c4
c5
c6
c7
c8
c9
c10
C mid 1
C mid 2
C mid 3
C mid 4
d1
d2
d3
d4
d5
d6
d7
d8
d9
d10
Main C1
Main C2
br1
br2
br3
br4
br5
br6
br7
br8
br9
br mid1
br mid2
br mid3
br main

Materials

Canopy fabric	
Upper surface leading edge	Dominico 30DMF 41 g/m^2 water repellent
Upper surface trailing edge	Dominico 30DMF 41 g/m^2 water repellent
Lower surface leading edge	Dominico 30DMF 41 g/m^2 water repellent
Lower surface trailing edge	Dominico 30DMF 41 g/m^2 water repellent
Ribs	Porcher Skytex 40 g/m^2 water repellent

Lines	
Upper	Liros DC 60 | 120
Middle	Liros DC 60 | Cousin 16650
Main / brake	Liros DC 120 | Cousin 16650 | 12999

Riser	
	Güth & Wolf 20mm Polyester

Line shackle	
	Stainless steel 3.85mm

Canopy thread	
	Amann & Söhne - Mill Faden 150D/3 Polyester bonded

Appendix

Glider details

Size:	**Colour:**	**Serial number:**
Check flight (date): _____ Name and signature: _____		

Pilot details / Proof of ownership

1. Owner	
Name:	
Address:	
Phone:	
Email:	
2. Owner	
Name:	
Address:	
Phone:	
Email:	
3. Owner	
Name:	
Address:	
Phone:	
Email:	

Inspections and repairs overview

Date	Work carried out	General condition on delivery	Completed by (Name)	Stamp and signature

Notes

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