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skywalk

TONKA 2

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1 INTRODUCTION

Welcome to skywalk!

Congratulations on the purchase of your new TONKA2 and thank you for your trust in us and in our products. In this manual you will find information that will help you quickly get to know your new paraglider to ensure your fun for a long time.

At skywalk we are enthusiastic about wind sports and innovative technologies. When we founded skywalk in 2001, our goal was to make paragliders and kites that offer new solutions to set new impulses, and to provide customers with a maximum of user friendliness. Today we are one of the most successful paraglider manufacturers in the world. For this we are thankful for our curiosity about everything that flies, sails and surfs, as well as our interest in a variety of outdoor sports. It's this "big picture" view that allows us to continuously set new accents in paragliding.

We are always open for questions, comments or critique and are happy to provide you at any time with further information!

Your skywalk Team
Pure Passion for Flying

2 DESCRIPTION

The TONKA2 is a small, light glider with very appealing glide performance, high agility and fun factor. Thus, the TONKA is a fun and light but still robust wing, suitable for a wide range of use. For soaring in strong winds, your next hike & fly tour or in the thermals, the TONKA2 will be your trusty companion.

Pilot Requirements

Due to the high wing load, the TONKA2 demands a pilot with regular flying experience, solid active flying experience with other paragliders and experience dealing with canopy collapse. The TONKA2 is very predictable in its reactions, but to some extent requires a dosed and quicker braking reaction than a normally-sized glider.

SCOPE OF DELIVERY

The TONKA2 comes standard with inner bag, compression strap, give-away, glider backpack, riser bag and manual.

CAUTION

THE FIRST FLIGHT MUST BE CARRIED OUT BY A QUALIFIED EXPERT. THE TYPE CERTIFICATE AND THE DATE OF THE FACTORY INSPECTION CAN BE FOUND IN THE MIDDLE CELL OF THE GLIDER. THE DATE OF THE FIRST FLIGHT AND NAME OF THE PILOT SHOULD BE ENTERED HERE. SHOULD THIS BE MISSING, ASSUME THAT THIS GLIDER IS A PROTOTYPE THAT HAS NOT BEEN TESTED.

2 TECHNICAL DATA

Size	12
Cell number	34
Area flat (m²)	14,1
Wingspan flat (m)	8,22
Aspect ratio	4,8
Area projected (m²)	11,8
Wingspan projected (m)	6,4
Aspect ratio projected	3,44
min. profile depth (cm)	48,7
max. profile depth (cm)	213
middle line length without risers (cm)	472
Line consumption (m)	213
Weight (kg)	2,1
Take-off weight from - to (kg)	70-85
Winch certified	yes
JET FLAP technology	yes
Paramotor homologation	no
Accelerator	yes
Maximum speed bar travel (mm)	145
Trimmers	no

JET FLAP

Each of our gliders is equipped with skywalk's patented JET FLAP technology. Air is conducted from the bottom of the wing (pressure area) to the top of the wing (vacuum area) and is blown out there with a higher speed. The connection is established through jet shaped channels located toward the back of the wing. The addition air mass on the top of the wing delays the flow separation. The stall occurs later, the minimum flyable speed is lower, and the pilot has more reserve in the angle of attack. This is especially important in phases such as takeoff and landing. The JET FLAPS also help to improve climb performance since they allow you to circle very slowly in thermals with little danger. The glider can be flown normally as the JET FLAPS don't require any special control technique.

2 LINE SYSTEM

The layout of the suspension points is designed for optimal load distribution and a long lifespan. With all considerations and calculations however, our focus is always on safety. The mix of materials used on the lines of the TONKA2 is an ideal combination of durability, low stretch and low drag.

The skywalk TONKA2 has 3 A-, 3 B-, 3 C-, and 1 stabilo line.

The main-stabilo is connected with the B-riser.

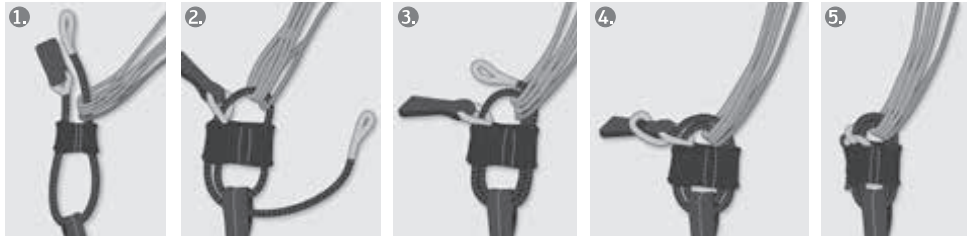
The brake lines are not load-bearing and lead from the trailing edge over the main brake lines through the brake pulleys on the C-risers to the brake handles.

A marking on the main brake line indicates the position of the handle attachment.

This setting should not be lengthened, for example, to provide more brake travel in extreme flight situations or during landing, nor shortened such that the glider is flown constantly with some brake on.

The line locks have been replaced by soft links for the TONKA2 for the reason of weight savings. The soft links are the connector between the harness and the lines. It is recommended that the soft links get exchanged due to mechanical stress after 4 years or 400 flight hours (whichever occurs earlier).

Soft link opening looks to the center of the glider



1. Thread the soft link through the riser, the elastic band and the lines.

2. Thread the soft link through the soft link loop, the elastic band and the riser.

3. Thread the soft link through the elastic band and lines.

4. Thread the soft link through soft link loop and then lay over the other loop (loose end) over the elastic band.

5. Tighten the loop and plug the webbing into the elastic band.

To provide a better overview and to make sorting easier, the lines have different colors:

- the A I, A II, A III mainlines and A-risers are red
- the B I, B II, B III mainlines are yellow
- the main brake-lines and the stabilo lines are orange
- the C I, C II, C III mainlines are blue

The TONKA2 is equipped with 3 risers each side.

- All A-lines lead to one A-riser.
- The B-lines and the stabilo line lead to the B-riser.
- The C-lines lead to the C-riser.

An illustration of the risers can be found at the end of the instructions.

IMPORTANT SAFETY WARNING

Flying a paraglider requires maximum caution at all times.

We remind you that you fly your paraglider at your own risk!

As the pilot it is your responsibility to ensure the airworthiness of your glider before every flight. Remember that mental fitness is also a risk factor.

The skywalk TONKA2 may not be flown:

- outside of the minimum and maximum certified takeoff weights
- with a motor
- in rain, snow, or in extremely turbulent weather conditions, or in strong wind
- in clouds or fog (visual flight)
- with insufficient pilot experience
- if flown with more than one person
- if the canopy is wet
- at temperatures under -30°C or over 50°C
- for acrobatic flight (flight maneuvers at an angle of more than 90 degrees)

During production, the TONKA2 underwent carefully selected quality controls and was inspected once again before shipping. Keep in mind that a paraglider can only be flown while observing the laws of the country in which it is flown.

3 ACCELERATION SYSTEM

The skywalk TONKA2 can be equipped with a foot-operated acceleration-system. The acceleration-system effects the A- and the B- risers. Exact lengths and an illustration of the risers can be found at the end of the instructions. Both risers are equipped WITHOUT trimmers.

4 HARNESS

The skywalk TONKA2 is licensed for all certified harnesses of the GH type (harnesses without solid cross-bracing).

Be aware that the relative brake travel and the agility of the glider change with the height of the attachment point.

5 FLIGHT TECHNIQUES AND CHARACTERISTICS

PREFLIGHT CHECK AND MAINTENANCE

It is important to check all paragliding equipment thoroughly before every flight to see if it has any defects. Also check the paraglider after long flights and after long storage.

Check thoroughly:

- All seams on the harness, the rescue chute attachments and the risers
- That all connecting parts, line shackles and carabiners are closed
- The brake line knots right and left, following the lines all the way up to the canopy
- All other lines from the risers to the canopy
- All line attachment points on the canopy
- The top and bottom of the wing for damage and wear and tear
- The profiles and the crossports on the inside
- If the glider is dry



CAUTION

DO NOT LAUNCH IF YOU FIND ANY DEFECTS, EVEN SMALL ONES! IF YOU FIND ANY SIGNS OF DAMAGE OR ABNORMAL WEAR AND TEAR, CONTACT YOUR FLIGHT SCHOOL OR SKYWALK DIRECTLY.

LAYING OUT THE GLIDER

If you use your paraglider for the first time we recommend that you practise some inflations and try some simple flights at a training site. This way you are able to get used to your skywalk TONKA2. Lay out the canopy so that the leading edge is slightly arched. The middle of the canopy should form the deepest point of the paraglider. This way the A-lines are tensioned first in the middle whilst inflating. The paraglider inflates evenly which ensures a stable and straight take off.

The TONKA2 is very easy to sort due to the 3 line levels, yet sorting should always be completed carefully. All lines have to run freely without any knots and twists from the risers to the canopy. During flight, tied or crossed over lines can often not be released or untangled! The brake-lines are lying directly on the ground, so please pay attention that they do not become entangled during launch. There shouldn't be any lines beneath the canopy during take-off. Line-overs can have fatal consequences!

TAKE-OFF

The skywalk TONKA2 is easy to launch. Hold the A-risers and the brake handles in your hands. For a better identification, the A-lines and covers at the A-risers are coloured red. The brake lines are coloured orange and the brake handles are black. Hold your arms slightly sideways and backwards like an extension of the A-risers. Before launching check the laid out glider. Further check the wind direction and the airspace! Pull rapidly and the canopy of the skywalk TONKA2 will launch and rise above your head. The canopy will inflate fast and reliably.

Keep the paraglider straight above your head and run forward. Slow down a little as soon as the upward pull decreases. You can open any collapsed cells by pumping the affected side. Changes of directions that are necessary can be carried out now. Look and feel that the wing is properly inflated.

Don't make your final decision to accelerate or to take-off until you are absolutely sure that the wing is properly and evenly inflated. Otherwise, stop the take-off procedure immediately! During reverse launches and in strong winds, it is possible that the paraglider surges forward and inflates faster than intended.

You can counteract this by running towards the glider. We recommend practicing this demanding launch technique on a flat slope! If you reverse launch it is advisable to only use the inside A-lines. This way the glider opens a bit more slowly and in strong winds you don't have to deal with the full pressure at once.

TURNING

The skywalk TONKA2 is very manoeuvrable and reacts to steering inputs directly and without delay. Simple weight shift enables you to fly very flat turns with minimal altitude loss. Combined steering technique: Weight shifting and pulling of the inside brake line allow extra tight turns. During turning you can control the speed, the curve radius and banking by additional use of the outer brake. Counter braking or releasing the brake lines can change these parameters most effectively.

CAUTION

**PULLING THE BRAKE LINES TOO FAR AND TOO FAST CAN CAUSE A STALL!
YOU CAN RECOGNIZE AN IMPENDING NEGATIVE SPIN BY THE HIGH CONTROL
LINE PRESSURE AND SLIGHT BACKWARDS FOLDING OF THE WING TIP.
IF THIS HAPPENS, RELEASE THE INSIDE BRAKE IMMEDIATELY.**

EMERGENCY STEERING

Should a brake line break or a brake handle become detached, you can still steer and land the glider with limited control using the C-risers.

ACTIVE FLYING

Active flying means flying in harmony with your paraglider. That means that instead of flying with the brakes always in the same position, you are aware of the slightest disturbances in the air and react accordingly, especially in turbulent thermals. Never let go of the brake handles, especially in turbulent conditions! Despite your glider's high stability, you should constantly use brakes and weight shift to correct the position of the canopy in turbulence. With a light tug on the brakes you can constantly keep in contact with the canopy and feel its internal pressure. That way you can recognize and react early to a pressure drop and impending collapse. Accelerated collapses in general tend to be more impulsive and require increased attention on the part of the pilot. As you gain experience, these reactions will become instinctive. The skywalk TONKA2 rarely collapses even without a pilot reaction. However, maintaining an active flying style will greatly increase your margin of safety.

Examples:

- To avoid large changes in the angle of attack, release the brakes when flying into strong updrafts and pull them when flying into downdrafts.
- When flying in turbulent air, if you feel a drop in pressure in parts of your glider, pull the brake briefly and progressively until the pressure becomes normal again. If you brake the wing too quickly and too far, you risk stalling it!

ACCELERATED FLYING

The speed bar should be secured to the harness prior to launch. To use the acceleration-system you will need to make some effort. This can affect the sitting position in the harness. Therefore we recommend an upright position in the harness. Adjust the harness before your first attempt of accelerated flight. We remind you to only fly in wind conditions that don't require constant use of the acceleration-system. To reach the maximum speed press the acceleration-system firmly until both pulleys on the A-risers touch each other. As soon as you apply the acceleration-system the angle of attack will be reduced, the speed increases, but the paraglider becomes less stable and can collapse more easily. Therefore always use the acceleration-system with adequate altitude from the ground, obstacles and other aircraft.

Avoid adjusting the speed bar too short. It is important to avoid unintentionally accelerating the glider due to a setting that is too short. Accelerated collapses are normally more impulsive and demand fast reactions.

CAUTION

- NEVER ACCELERATE IN TURBULENT AIR!**
- NEVER ACCELERATE NEAR THE GROUND!**
- NEVER LET GO THE BRAKE HANDLES!**
- NEVER BRAKE THE GLIDER SYMETRICALLY WHILE FLYING ACCELERATED!**

LANDING

The skywalk TONKA2 can be landed easily. Make your final approach against the wind and let the glider slow down at its own rate. Further reduce the speed by applying the brakes lightly and evenly. At about 3m above the ground you increase the angle of attack by slowing down more and eventually completely flare out the glider. When you have reached the minimal speed apply full brake. In strong head winds, slow down carefully. When you have reached the ground safely, stall the glider warily. Avoid turning sharply before your final approach. This increases the danger of pendulum effect!



PACKING

Conscientiously packing your glider guarantees a consistently high quality. First, remove all leaves, grass, sand, etc., then sort the lines and lay them on top of the glider. Always make sure that the glider is dry and clean before you pack it.

Start with the second cell from the middle and lay them cell for cell on top of each other so that the reinforcements of the inlets are kept together. Repeat this process on the trailing edge by starting from the middle and folding together every second panel, drawing them towards the middle. After that, lay the folded panels on top of each other and press the air from the trailing to the leading edge. After doing this on both sides, turn one half onto the other and beginning from the bottom, fold the glider up towards the leading edge.

You can fold the risers in with the glider or leave them sticking out at the bottom or still attached to your harness. When packing, remember to straighten out the lines and shackles to keep them from bending. After every fold, let out the remaining air in the glider through the leading edge. Attach the compression strap around the glider loosely and place it in the nylon bag. If you prefer to use a tube, the steps are the same up the point where you turn the folded panels onto each other. Pull the straps tight and make sure that no material is caught in the zippers.

You can also pack any skywalk glider with elastic nylon wires by any other method without damaging the leading edge. Place the harness with the seat board facing up (to distribute the load better) on top of your glider and close the zippers. You will find adequate space rest of your equipment (helmet, overall, instruments, etc.) under the cover of the rucksack.

A hint to increase the life of your glider even more:
Don't pack your glider too tightly. Treat the leading edge with care despite its robustness and open up your wing a bit if you store it for a longer period of time.

WINCHTOWING

The skywalk TONKA² is well suited for winch towing. Make sure that you only use certified winches and that you climb from the ground at a flat angle.

The pilot must have had proper towing instruction and must ensure that the winch operator has had proper training that includes paragliders. When launching on a winch, always fly with a lot of feeling and don't brake too much as your glider will already have an increased angle of attack. We recommend the use of a towing adapter.

FLYING WITH A MOTOR

Currently, the TONKA² has no certification for flying with a motor. You can find out the current status of motor certification at any dealer or importer, or by asking skywalk directly.

6 DESCENT TECHNIQUES

This manual is not intended to be an instruction manual and skywalk highly recommends taking part in a safety training course over water. The following hints will help you to get the most out of your glider.

For all extreme maneuvers it is important:

- First to practice them under the tutelage of a certified flight instructor as part of a safety training course.
- To ensure that the airspace below you is clear before entering each maneuver.
- To maintain eye contact with your glider throughout each maneuver.



SPIRAL DIVE

The skywalk TONKA2 does not tend to enter a stabile spiral dive – rather, it will recover by itself if the brakes are released. You can enter a spiral dive by carefully increasing the brake pressure on the inside of a turn while shifting your weight in the same direction. If the glider doesn't bank enough and the sink rate doesn't increase, it's better to start over again rather than to keep applying brake without sensitivity. The spiral begins when the glider banks sharply to the side and enters a sharp, steep turn. You can control the bank angle and descent rate by applying or releasing the inside brake.

The spiral dive can be used to lose altitude quickly, so please consider the following:

- High sink rates and the related high G-forces lead to a high physical strain on the body that may be too much for inexperienced pilots! Approach spiral dives slowly!
- Tensing your stomach muscles during a spiral dive can be very helpful!
- If you feel dizzy or faint, exit the spiral dive immediately!
- Due to the extreme altitude loss in a spiral dive, make sure you always have enough safe reserve.
- To avoid strong surging when exiting the spiral dive, release the inside brake slowly while continuing to apply the outside brake.
- The brake line pressure in a spiral dive is substantially higher than in normal flight!

CAUTION

TO EXIT A SPIRAL WITH A HIGH SINK RATE (→ 14M/S), IT MAY BE NECESSARY TO BRAKE THE OUTSIDE HALF OF THE GLIDER AND/OR TO SHIFT YOUR WEIGHT TO THE OUTSIDE OF THE TURN. THE EXIT MAY REQUIRE SEVERAL COMPLETE ROTATIONS AND MAY CAUSE A HIGH LOSS OF ALTITUDE. FOR THIS REASON, DON'T PERFORM THIS MANEUVER AT AN ALTITUDE OF LESS THAN 200 METERS! BY THE TIME YOU REACH THIS ALTITUDE, THE MANEUVER SHOULD HAVE ALREADY BEEN COMPLETED!

BIG EARS

In contrast to the spiral dive, with big ears your forward speed is higher than your sink speed. This descent method is used to quickly leave dangerous areas in a desired horizontal direction. To collapse the wing tips, pull down both outside A-lines. The resulting collapsed wing tips will put the glider in a stable sink flight. The brake handles remain in your hands together with the outer A-lines. The glider can still be steered by braking on one side or by weight shifting. The danger of canopy disturbances in turbulent air is greatly reduced with big ears.

To exit, release the A-lines. The canopy will normally reopen by itself. You can brake a little to Speed-up the opening. It is better if you reopen one side at a time to reduce the danger of a stall.

Examples:

- If the pilot is surprised near a summit with little ground clearance by strong wind or a thundercloud, neither a B-stall nor a spiral dive can help.
- If the pilot is stuck in very strong lift, it is advisable to exit the lift band with the use of big ears and to find sinking air in which to lose altitude.

B-LINE STALL

The B-lines are pulled down symmetrically (15-20cm). Keep the brake handles in the respective hands. The airflow on top of the profile largely detaches and the paraglider descends without flying forward. Pulling hard on the B-risers allows you to decrease the area of the wing and increase your sink rate, but this also increases the risk of the wing forming a rosette to the front. If this happens, recovery from the B-stall immediately! You can exit the stall by quick and symmetric release of the B-lines. The paraglider will pitch forward and pick up speed. At no time you may use the brakes in this case! If the wing doesn't reopen you may speed up the opening process by gently braking. Subsequently: Since the TONKA2 has only 3 levels, the amount of energy needed for the B-stall is higher than with conventional 4 level paragliders. Generally speaking, the B-stall is a maneuver that is being performed less and less, since it subjects the glider materials to a lot of stress.

7 EXTREME FLIGHT MANEUVERS

ASYMMETRIC COLLAPSE

The TONKA2 is an LTF/EN-D glider and should be flown by seasoned pilots with experience in extreme conditions. Your skywalk TONKA2 is a very stable glider, but collapses can still happen in strong turbulence.

The inherent turn toward the collapsed side of the glider can be minimized by braking the open side. With large collapses, brake the open side carefully to avoid stalling the wing. If the collapse doesn't open despite braking and weight shifting on the open side, you can speed up the opening process by repeatedly pumping the brake on the collapsed side.

CRAVAT / LINE OVER

This type of disturbance has never occurred during test flights with the skywalk TONKA2. However, it is possible in extremely turbulent air or due to a pilot error that part of the wing could get tangled in the lines.

The pilot should first stabilize the glider by carefully braking the open side. Without pilot reaction, a cravat can cause a glider to enter a stable spiral dive!

To clear the cravat, there are several possibilities:

- Pumping the open side
- Pulling on the stabilo-line
- Perform a manual collapse of the affected side
- Fullstall

SHOULD THESE MANEUVERS NOT SUCCEED OR IF THE PILOT FEELS OVERWHELMED BY THE SITUATION, THE RESCUE PARACHUTE SHOULD BE DEPLOYED IMMEDIATELY!

FRONTSTALL

The glider can be front-stalled with a strong pull on the A-risers or when encountering sudden down drafts. The leading edge collapses impulsively along its entire length. Light brake pressure can reduce oscillations around the longitudinal axis and will help to speed up the opening of the canopy.

The skywalk TONKA2 will recover from a front stall by itself. Should the recovery be delayed by turbulence, you can support it with light braking on both sides. Make sure that you don't over brake your glider!

PARACHUTAL STALL

The TONKA2 never showed a tendency to parachutal stall in the entire development phase. Despite this, it is possible to perform a parachutal stall. Gliders with porous material (UV radiation) are especially susceptible, as are those that are burdened frequently by winch tow launches. A parachutal stall can also occur when the glider is flown in rain (soaks up moisture). The glider has no forward speed and a high sink rate.

The skywalk TONKA2 will normally recover from a parachutal stall by itself. If this doesn't happen, the pilot can end the stable parachutal stall by pushing forward on the A-risers at the level of the line shackles or by activating the speed bar with your feet.

CAUTION

IF YOU APPLY THE BRAKES DURING A PARACHUTAL STALL, THE GLIDER WILL IMMEDIATELY ENTER A FULL STALL. NEAR THE GROUND, A STABLE PARACHUTAL STALL SHOULD NOT BE EXITED DUE TO THE RESULTING OSCILLATIONS. INSTEAD, THE PILOT SHOULD SIT UP IN HIS HARNESS AND PREPARE FOR A PARACHUTE LANDING FALL.

NEGATIVE SPIN

A paraglider enters a negative spin when one side of the wing is stalled. The canopy rotates around the vertical axis with the center of rotation located within the wingspan. The inside wing flies backwards.

There are two causes for the negative spin:

- One brake is pulled too far and too hard (e.g. when entering a spiral dive)
 - One brake is pulled too hard when flying slowly (e.g. while thermal flying).
- If an accidental negative spin is exited immediately, the skywalk TONKA2 will normally resume flight without much altitude loss. Just release the brake line that was pulled too far until the airflow is restored to the inside wing. After a long negative spin, the canopy may surge forward on one side. This could result in an impulsive collapse.

WINGOVERS

Alternating left and right turns as the bank angle is gradually increased. If wingover are flown high with a large bank angle, the outside wing tip may loose pressure and start to feel light. In this case, don't increase the bank angle any more as the tip could collapse impulsively.

CAUTION

NEGATIVE SPINS AND WINGOVERS OVER 90° ARE FORBIDDEN ACROBATIC MANEUVERS AND ARE NOT ALLOWED TO BE FLOWN UNDER NORMAL CONDITIONS. THE WRONG EXIT TECHNIQUE OR PILOT OVERREACTION CAN HAVE DANGEROUS CONSEQUENCES REGARDLESS OF THE TYPE OF GLIDER!

FULLSTALL

A glider enters a full stall when both brakes are pulled down too far. The glider loses forward speed and eventually collapses back behind the pilot.

CAUTION

AT THIS MOMENT IT IS IMPORTANT TO NOT LET UP ON THE BRAKES, OTHERWISE THERE IS THE DANGER THAT THE GLIDER MAY SURGE FORWARD IN FRONT OF THE PILOT AND MAY EVEN FALL BELOW THE PILOT.

The available brake line travel depends on the glider size and is about 40cm for the TONKA2 12. However, these values are only reference points to give an idea of the useable brake travel. In turbulent air, a stall can occur much earlier or later with the application of a higher or lower amount of brake line travel.

MATERIALS

The skywalk TONKA2 is manufactured from the highest quality materials. skywalk has selected the best possible combination of materials with regard to resilience, performance and longevity. We are aware that the durability of the glider is a deciding factor in the pilot's satisfaction.

WING AND RIBS

Upper sail: Porcher Skytex 27g, Skytex 38g
 Lower sail: Porcher Skytex 27g
 Ribs: Porcher Skytex 27g hard

LINES

We have chosen a mixture of Technora and Dyneema due to its minimum stretch and high durability. These lines will never look »old« even after years of use.

A, B, C Main lines: Liros PPSL200, TSL280
 A, B, C Middle lines: Liros PPSL160/120, DSL70
 A, B, C Top lines: Liros DC60
 Brake lines: Liros DFLP200/32 / DSL70 / DC60

RISERS

The risers are manufactured from 6 mm Dyneema tube webbing by Liros. Stretch values, strength and stability of this material are among the highest of all webbing products currently on the market. Due to the very light materials that have been installed, the risers are more flexible and softer. Therefore it should be paid more attention to the fact that the lines and risers are sorted correctly.

9 MAINTENANCE

With proper care, your skywalk glider should remain airworthy for many years. A well treated glider will be able to fly twice as many hours as a glider that after each use is stuffed without feeling back into its sack. Always remember: your life depends on your glider!

STORAGE

Ideal is a dry, dark place with a constant temperature. Moisture is an old enemy of the durability of all paragliders. For this reason, always dry your equipment before you store it, preferably in a heated and well ventilated room, so that moisture can evaporate.

CLEANING

Any rubbing or abrasion can cause your glider to deteriorate quickly. The PU coated canopy material is dirt-repellent and in emergencies, can be cleaned easily. If you still think you need to clean your glider (e.g. of cow manure), then use a soft, damp towel or a sponge WITHOUT soap, solvent or detergent. Let your glider dry thoroughly before storing it.

REPAIR

Repairs should only be carried out by the manufacturer or by an authorized skywalk service center. Exceptions include the repair of small cuts (up to about 5 cm that don't affect a seam) that can be patched with skywalk sail tape, and the swapping out of lines. Replacement lines can be ordered directly from the skywalk homepage.

LINE REPAIRS

The main lines of the skywalk TONKA² consist of a Dyneema- or Technora core and a polyester sheath. Avoid heavy loads on individual lines as excessive stretching may be irreversible. Repeating kinking of lines at the same spot reduces their strength. Visible damage to lines, even if it's only to the sheath, should be checked and possibly repaired. New lines can be ordered from the manufacturer or from an authorized skywalk service center. They will help you to replace defective lines. Before a line is replaced, the correct length has to be verified by comparing it with the corresponding line on the other side of the wing. After the replacement and before your next flight, perform a line check by kiting up the glider on the ground.

HINTS FOR MATERIAL CARE

- Avoid leaving your glider unused in the sun or lying outside in bad weather.
- Avoid exposing your glider to abrasion by dragging it over sticks and stones.
- Always fold your glider carefully and loosely and avoid sharp creases and extreme compression of the material.
- Always store the risers in the riser bag provided.
- Should the material come in contact with salt water, rinse it immediately and carefully with fresh water and make sure that it has enough time to dry in a shady location.
- If you land in a tree, never pull hard on the lines or material to free your glider. Rather, do so carefully and with patience. Once you have removed all leaves and branches from your glider, inspect the line lengths and symmetry before your next flight.
- When laying out your glider, make sure that neither material nor lines are dirty as particles caught in the fibers can shorten the lines and damage the material.
- If lines get caught on the ground, they can get stretched or torn during launching. For this reason, make sure that all lines are free and avoid stepping on them.
- Make sure that no snow, sand or stones find their way into the canopy because weight on the trailing edge of the glider can brake or even stall it. Should this happen anyway, lift up the glider by C-lines so that the air inlets are pointing down and the canopy can empty itself.
- When launching in a strong wind, part of the glider may hit the ground hard. This can lead to tears in the ribs or damage to the seams. For this reason, inspect your glider on a regular basis for this type of damage.
- After landing, don't let the glider fall to the ground on its nose as this can damage the material in the leading edge.

10 DISPOSAL

When choosing materials, skywalk places high value on environmental compatibility and the highest quality control. Should your glider someday no longer be flyable, remove all metal parts such as shackles, pulleys, etc. All remaining parts such as lines, material and risers can be turned in at a recycling center. The metallic parts can be turned in at a metals recycling center. The best solution is to send your retired skywalk glider directly to us. We will then take care of recycling it.

11 MAINTENANCE CHECK

According to LTF regulations your glider will have to undergo a maintenance check after 24 months or after 200 flight hours (according to which occurs first). According to these regulations the Two-Year-Check has to be carried out by the manufacturer, its representative or by the owner himself. The check will have to be confirmed by a official stamp (ex. Check-air label). Missing this deadline or if the check is carried out by an unauthorised company will lead the skywalk TONKA2 to lose any guarantee claim. We recommend not doing this check yourself. Without the proper instruments and specific knowledge the check will be insufficient. Airworthiness is therefore not guaranteed.

CAUTION

IF THE GLIDER IS SUBJECTED TO ABOVE AVERAGE WEAR AND TEAR (EXTREME FLIGHT MANEUVERS, FORBIDDEN ACROBAT FLIGHT MANEUVERS) OR IS USED FREQUENTLY IN SAND OR SALTY AIR, IT SHOULD BE INSPECTED EARLIER OR SHOULD UNDERGO AN ADDITIONAL INSPECTION!

Changes to the paraglider:
Your skywalk TONKA2 is manufactured within the regulated parameters of tolerance. These parameters are very narrow and must not be altered under any circumstance. Only this way the optimum balance between performance, handling and safety can be guaranteed!

CAUTION

UNAUTHORIZED CHANGES INVALIDATE THE TYPE APPROVAL AND ALL LIABILITY CLAIMS AGAINST THE MANUFACTURER ARE INVALIDATED.

12 HOMOLOGATION

The TONKA2 is certified to LTF 09 and EN926-1, EN926-2 in the category D. The TONKA2 is defined as a lightweight sport aircraft with an empty weight of less than 120kg in the paraglider category. The many homologation tests are the last hurdle in the development of a skywalk paraglider. The homologation test flights only take place when the test team is completely happy with the glider development. We remark that the certification results will differ during flight in thermals or turbulent air. The homologation informs solely regarding the paraglider performance during extreme-flight-maneuvres performed in stable air conditions. These extreme-flight-maneuvres during the homologation process should thus not be over-valued. Remember that certification maneuvers were carried out with a harness in the group GH with a carabiner distance (middle to middle) of 42-46 cm. If another harness is used, the glider may display flight characteristics that differ from those in the description.



13 NATURE AND ENVIRONMENTALLY COMPATIBLE BEHAVIOR

We have taken the first step towards ecological awareness with our nature-friendly sport. Especially with our mountain climbers who prefer to climb to the launch site. Nevertheless, we plan on continuing in the same vein. This means specifically: clean up your trash, stay on marked trails and don't cause unnecessary noise. Please help to maintain the balance of nature and to respect animals in their territory.

14 CLOSING WORDS

The skywalk TONKA2 is at the pinnacle of paraglider development in the market for sport class gliders and shows what is possible regarding performance, safety and innovation. It cost us a lot of time to develop this glider, but it was also a lot of fun. In this development we recognize the challenge of making the right product for every area and individual taste. We are pleased if you notice this during your first flight and if you feel a certain unity with your glider from the very beginning.

The TONKA2 will provide you with plenty of joy over many years if you treat it and care for it properly. Respect for the demands and dangers of our sport are essential for successful and beautiful flights. Even the safest paraglider can be dangerous due to misjudgments of meteorological conditions or pilot error.

Always remember that flying sports are potentially risky and that you are responsible for your own safety. We advise you to fly carefully and to respect laws in the interest of our sport, because every pilot always flies at his or her own risk!

WE WISH YOU A LOT OF FUN WITH YOUR NEW GLIDER AND ALWAYS HAPPY LANDINGS!!

Your skywalk Team

SKYWALK
GmbH & Co. KG

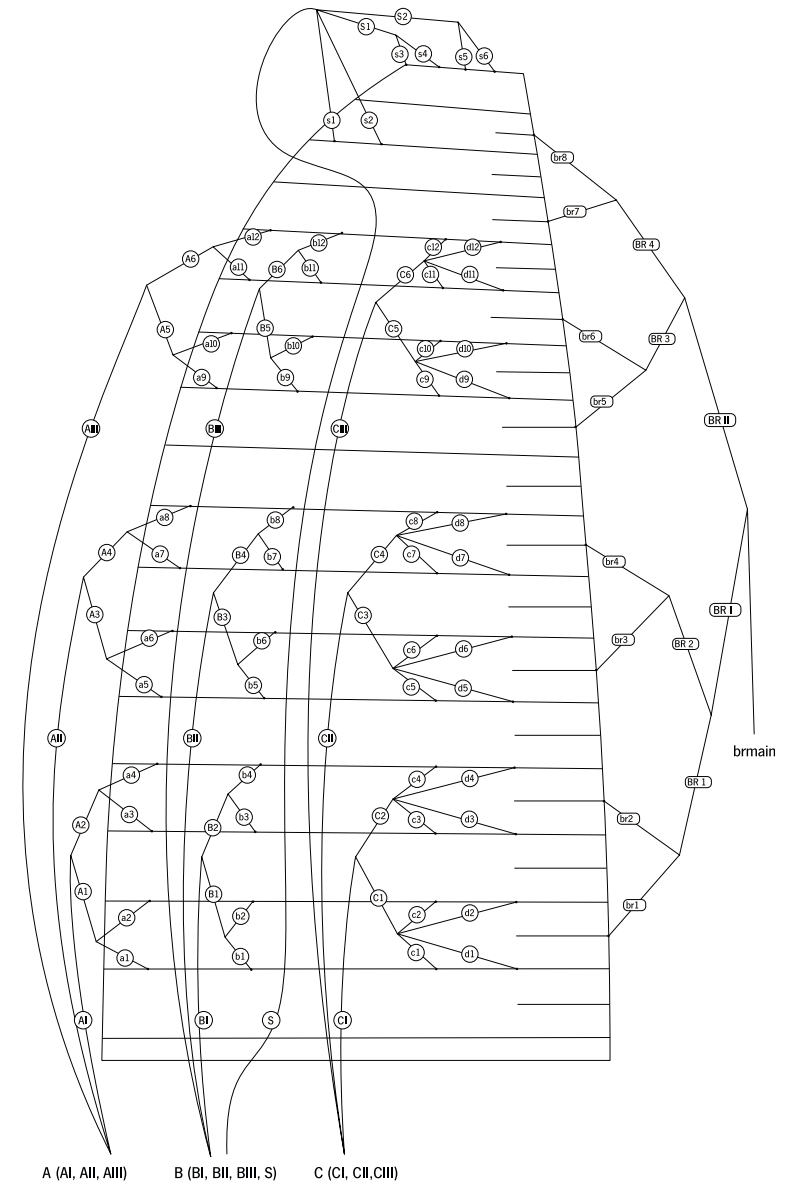
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15 LINE SCHEMATIC

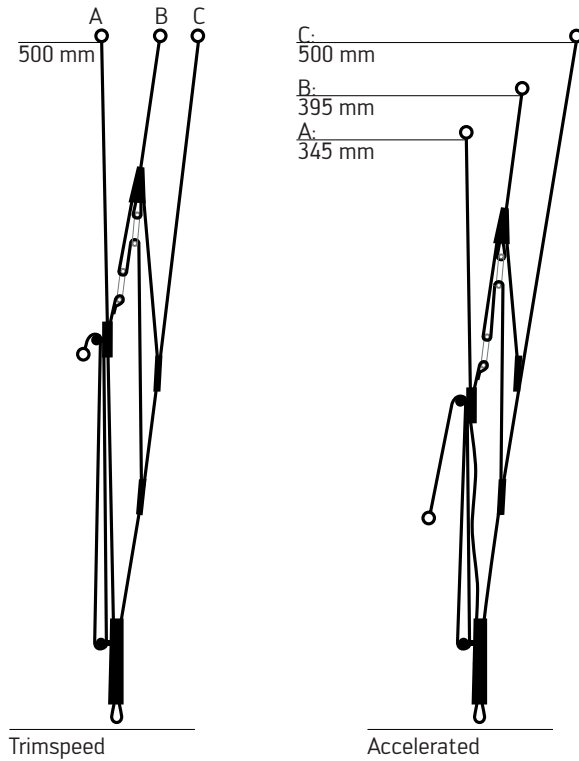
This line schematic is only for illustration purposes. Schematics for other sizes are available through your flight school, importer or skywalk.



16 RISERS

TONKA²

Size 12



17 OVERVIEW GLIDER



- 1 Stem lines
- 2 Top lines
- 3 Bottom sail
- 4 Cell openings
- 5 Top sail
- 6 Trailing edge
- 7 Nameplate

TEST PROTOCOL			Date:
Customer, Name:			
Adress:		Phone:	
Glider:	Size:	Serial number:	
GütesiegeInr.:		Date of last check:	
Date of first flight:	Year of construction:		

Accomplished checking:	Results [+/-]:	Description of failure:	Suggested repairs:
Identification:	<input type="checkbox"/> + <input type="checkbox"/> -		
Visual check of canopy:			
Upper surface:	<input type="checkbox"/> + <input type="checkbox"/> -		
Lower surface:	<input type="checkbox"/> + <input type="checkbox"/> -		
Profiles:	<input type="checkbox"/> + <input type="checkbox"/> -		
Line flares:	<input type="checkbox"/> + <input type="checkbox"/> -		
Leading edge:	<input type="checkbox"/> + <input type="checkbox"/> -		
Trailing edge:	<input type="checkbox"/> + <input type="checkbox"/> -		
Crossports:	<input type="checkbox"/> + <input type="checkbox"/> -		
Visual check of lines:			
Seams:	<input type="checkbox"/> + <input type="checkbox"/> -		
Abrasion spots:	<input type="checkbox"/> + <input type="checkbox"/> -		
Core withdrawals:	<input type="checkbox"/> + <input type="checkbox"/> -		
Vis. check of connectionparts:			
Suspension line screw locks:	<input type="checkbox"/> + <input type="checkbox"/> -		
Risers:	<input type="checkbox"/> + <input type="checkbox"/> -		
Length measurement:			
Risers:	<input type="checkbox"/> + <input type="checkbox"/> -		
Lines:	<input type="checkbox"/> + <input type="checkbox"/> -		
Examinations of the canopy:			
Firmness of canopy:	<input type="checkbox"/> + <input type="checkbox"/> -		
Porosity:	<input type="checkbox"/> + <input type="checkbox"/> -		

Examinations of the lines:			
Firmness of main lines:	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	daN	
	Results [+/-]:	Description of failure:	Suggested repairs:
Visual check of trimming:			
Checkflight necessary?			
Gütesiegel patch?			
Identification plate?			
Condition:	New Very good condition Good condition Well used Heavily used, but within gütesiegel standards, frequent checks required No longer airworthy, outside of the limit values.		
Repairs made?:			
Signature of tester:		Date:	
Name of tester:		Firm stamp:	

19 LINE LENGTH

Pos	Length	Material	Color	Pos	Length	Material	Color	Pos	Length	Material	Color	Pos	Overall Length	Pos	Overall Length
a1	829	DC60	white	c1	830	DC60	white	br1	1020	DC60	white	a1	4694	d1	4816
a2	806	DC60	white	c2	808	DC60	white	br2	911	DC60	white	a2	4671	d2	4795
a3	791	DC60	white	c3	790	DC60	white	br3	882	DC60	white	a3	4662	d3	4787
a4	810	DC60	white	c4	811	DC60	white	br4	909	DC60	white	a4	4681	d4	4802
a5	787	DC60	white	c5	785	DC60	white	br5	806	DC60	white	a5	4672	d5	4791
a6	745	DC60	white	c6	747	DC60	white	br6	732	DC60	white	a6	4630	d6	4752
a7	729	DC60	white	c7	728	DC60	white	br7	599	DC60	white	a7	4618	d7	4739
a8	729	DC60	white	c8	730	DC60	white	br8	526	DC60	white	a8	4618	d8	4731
a9	665	DC60	white	c9	667	DC60	white	BR1	1350	DSL70	orange	a9	4554	d9	4640
a10	618	DC60	white	c10	624	DC60	white	BR2	1308	DSL70	orange	a10	4507	d10	4593
a11	597	DC60	white	c11	598	DC60	white	BR3	1138	DSL70	orange	a11	4463	d11	4540
a12	568	DC60	white	c12	570	DC60	white	BR4	1191	DSL70	orange	a12	4434	d12	4504
A1	1197	PPSL160	red	C1	1197	PPSL160	blue	BR1	1573	DSL70	orange	b1	4631	s1	4236
A2	1203	PPSL160	red	C2	1207	PPSL160	blue	BR11	1735	DSL70	orange	b2	4608	s2	4230
A3	1106	PPSL120	red	C3	1104	PPSL120	blue	BRmain	1278	DFLP200/32	orange	b3	4597	s3	4024
A4	1110	PPSL120	red	C4	1114	PPSL120	blue					b4	4617	s4	4057
A5	973	PPSL120	red	C5	965	PPSL120	blue					b5	4608	s5	4104
A6	950	PPSL120	red	C6	950	PPSL120	blue					b6	4569	s6	4161
A1	2666	PPSL200	red	C1	2666	PPSL200	blue					b7	4558	br1	5225
A11	2773	PPSL200	red	C11	2782	PPSL200	blue					b8	4560	br2	5116
A111	2910	PPSL200	red	C111	2896	TSL280	blue					b9	4491	br3	5045
b1	821	DC60	white	d1	951	DC60	white					b10	4448	br4	5072
b2	798	DC60	white	d2	930	DC60	white					b11	4407	br5	4961
b3	782	DC60	white	d3	912	DC60	white					b12	4381	br6	4887
b4	802	DC60	white	d4	927	DC60	white					c1	4695	br7	4807
b5	776	DC60	white	d5	899	DC60	white					c2	4673	br8	4734
b6	737	DC60	white	d6	860	DC60	white					c3	4665		
b7	719	DC60	white	d7	837	DC60	white					c4	4686		
b8	721	DC60	white	d8	829	DC60	white					c5	4677		
b9	655	DC60	white	d9	773	DC60	white					c6	4639		
b10	612	DC60	white	d10	726	DC60	white					c7	4630		
b11	587	DC60	white	d11	688	DC60	white					c8	4632		
b12	561	DC60	white	d12	652	DC60	white					c9	4534		
B1	1185	PPSL160	yellow	s1	1099	DC60	white					c10	4491		
B2	1190	PPSL160	yellow	s2	1093	DC60	white					c11	4450		
B3	1093	PPSL120	yellow	s3	407	DC60	white					c12	4422		
B4	1100	PPSL120	yellow	s4	440	DC60	white								
B5	959	PPSL120	yellow	s5	298	DC60	white								
B6	943	PPSL120	yellow	s6	355	DC60	white								
B1	2623	PPSL200	yellow	S1	484	DSL70	orange								
B11	2733	PPSL200	yellow	S2	673	DSL70	orange								
B111	2871	PPSL200	yellow	S1	3157	PPSL120	orange								

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