

English





Welcome

Congratulations and thank you from Gin Gliders on your purchase of the Boomerang, the winning glider of the '99 and '00 Paragliding World Cup Constructor's trophy. Whatever your goals are in paragliding, we are confident that the Boomerang will help you to reach them. Being an experienced pilot, you probably know most of the techniques laid out in this manual involved in flying a paraglider. We would, however, like you to read this manual thoroughly. Safe flying starts with a good theoretical background.

For whom and why

The Boomerang is designed for all kinds of flying, from ridge soaring and thermalling to cross country and competition flying. It is also suitable for towing.

We expect the dealer and end-user to have sufficient knowledge and experience of high performance paragliders, their uses and dangers. Should this not be the case, this manual can never be the means to gain that experience.

This glider has been designed for a pilot who:

- flies more than 50 flights a year
- has previous experience of thermal flying in strong and turbulent conditions
- can assess the conditions he/she is flying in and if necessary abort the flight
- has completed a safety training course



The information in this manual can under no circumstances replace a proper training in an authorized paragliding school. If a friend offers you free beginners' "lessons" with a Boomerang or any other paraglider, don't be tempted, deny firmly.

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Certification

The Gin Gliders Boomerang has passed AFNOR tests in the COMPETITION Category. It has also been shock-tested and passed with a load corresponding to more than 8G of the maximum weight in flight.

SHV FSVL 	COMPETITION COMPETITION																				
	Category : Categorie :																				
Reference number Standards AFNOR S52-308/309 N° de conformité aux normes AFNOR S52-308/309	G 553/01																				
Certified date : Date de délivrance :	08/03/2001																				
MANUFACTURED / MARQUE : GIN GLIDERS Inc. MODEL / MODÈLE : BOOMERANG RF M																					
Configuration during the test / Configuration en tests																					
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After 2 years Après 2 ans	Serial number N° de série : N° de série : Date of manufacturing : Date de production :																				
Warning : before use, refer to the user manual ! Avertissement : avant utilisation, prendre connaissance des instructions du manuel de vol !																					
Conformity tests carried out by : / Tests de conformité réalisés par :																					
	AIR TURQUOISE for Swiss Federation of Free Flight pour la Fédération Suisse de Vol Libre Seefeldstrasse 224 CH-8008 Zürich																				
	AIR TURQUOISE: Fax 00-41 (0) 24 477 61 36 Tél 00-41 (0) 79 202 52 30 SHPA / FSVL : Tél 00-41 (0) 1 387 46 80 Fax 00-41 (0) 1 387 46 89																				

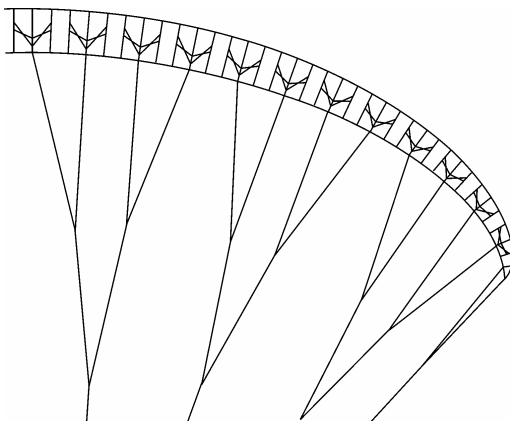
Design

The new Boomerang has been fully revised for 2001 and beyond from the original Boomerang, the most successful competition glider of the past 3 years. Its pedigree is second-to-none. Improvements have been made to the handling, glide ratio, maximum speed and take-off characteristics. This has been achieved by the introduction of several new technological features, such as the patented Rigifoil System, new computer software to optimize the shape at the nose fo the glider, and a new planform to optimize sink rate and handling.

Construction

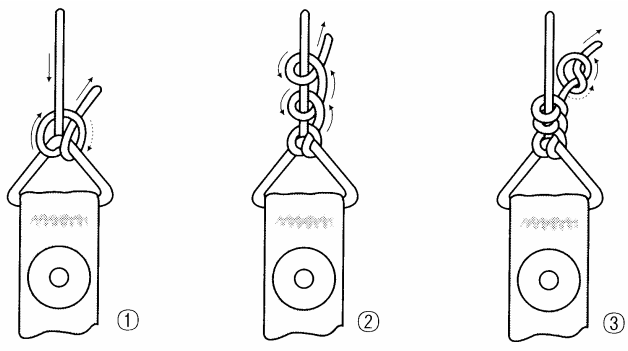
Extreme care is taken during the whole construction process of all Gin gliders. Each glider is assembled by one operator, to ensure consistency and accountability. The lines are cut under load with a specially designed robot to achieve maximum precision, and each line length is measured electronically at the end of the production process.

Using these design and construction techniques, Gin has reached a new standard in glider design, manufacturing, safety and performance.



Brake line adjustment

The main brake line lengths of the Boomerang correspond to the tested results of ACPUL. You may only lengthen them to suit your harness, body and flying style. We strongly recommend that you test fly the glider after every 2cm of adjustment. Bear in mind that these line lengths have been tested by some very experienced test pilots, they should be changed only a small amount. We recommend a double sheepshank or a bowline knot for the brake handle attachment.



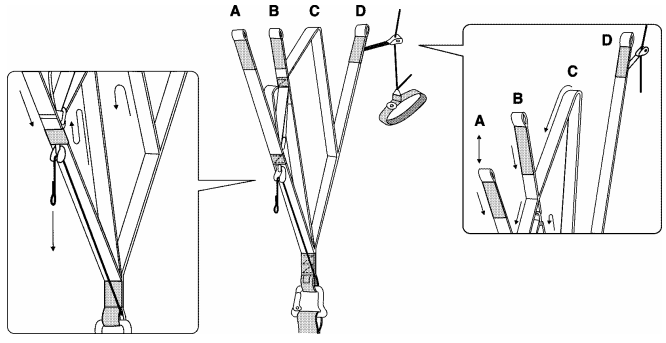
Speed system

When in use, the speed system lowers the angle of attack with a pulley-guided, foot-operated system.

The Boomerang has a very wide speed range. In spite of its optimized airfoil, Rigifoil system, air inlets and internal stability, the highest speeds should be used with caution, especially in turbulent air.

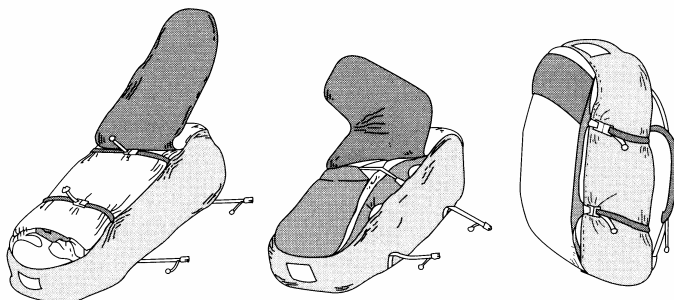
The highly effective speed system of the Boomerang allows for approx. 17km/h gain in speed. As all testing of the glider is made with the original speed system. Modifying the risers for more travel denies the glider its full safety potential and invalidates certification.

Riser	A	B	C	D
length at trim speed	52cm	52cm	52cm	52cm
length at full speed	33cm	37cm	44.5cm	52cm



Rucksack

All Gin gliders are delivered with a rucksack specially designed for keeping your equipment steady on your back for ergonomic carrying comfort and ease of use. There are both internal and external compression straps. Properly tightened, they keep the bag from bouncing against your lower back when walking. There are also two storage pockets for all those small things...



Unpacking

Slip the glider out of the storage bag and take the velcro compression band off. Note the way we pack our gliders at the factory (see also packing instructions). We recommend you unpack and inflate your glider on a small training hill, or even flat ground, when doing so for the first time. It is important to get a feel for the glider's behaviour during launch and take-off. There is nothing worse than the stress of a crowded take-off and new equipment for things to go wrong. Some test pilots spend hundreds of hours every year just ground handling gliders in the wind on flat ground.

Preparation for launch

Lay the glider out, get the lines and risers sorted out. Connect the risers to your harness karabiners. We recommend a thorough line check in all wind conditions, but take some extra care on nil-wind take-offs to ensure the lines cannot become tangled during launch.

Pre-flight checklist

1. Choose a sufficiently large take-off area with even ground and no obstacles.
Lay the glider out flat according to the planform.
Check all lines, cloth and risers for damage.
Check all line karabiners. If necessary, tighten with appropriate tool.
Inspect your harness and reserve handle.
2. Pull the glider's risers and lines gently, in groups or separately, to sort out any knots or tangles. Don't forget the brake lines. Remove any branches or rocks from around the spread-out lines.
Make sure the risers are not twisted or looped around any lines before attaching them to your harness.
3. Strap yourself into your harness and **don't forget the leg loops**.
4. Check the weather again, thermal cycles, turbulence, wind speed and strength.
5. Visually check the air in front of launch for other gliders.

Take off

The key to a successful launch technique is to practice ground handling on flat ground whenever you can. Then choose the appropriate day with good conditions, the appropriate take-off and do a thorough pre-flight check.

If launch conditions are windy, we recommend building a "wall" by partially inflating your glider on the ground, thus sorting lines out thoroughly. In such conditions a reverse launch is recommended, where you keep an eye on the glider during most of the take-off procedure. The Boomerang is very easy to control in a reverse launch situation. It quickly comes up over your head without overshooting. You only need to guide the A-risers, there is no need to pull them hard. A few steps down the slope and light brake pressure while turning around will put you even more in control.

In light wind or nil-wind conditions, we recommend laying the glider out straight, according to its planform (no V or U shape needed). The Rigifoil System improves further the glider's inflation and reflation characteristics. If the glider should come up sideways, run towards the lower side instead of trying to struggle against the force. Do not counterbrake too much, it may lose flying speed altogether. The Boomerang inflates steadily in nil-wind conditions and has no tendency to stick on its way up. Merely guide the glider with the A-risers throughout the take-off. There is no need to pull them hard.

An impulse launch (where you start running from close to the glider with slack lines) is not needed.

Line knots or tangles

If any problems occur at the take off, abort the launch immediately by stalling the glider. On steep launches stall one side of the glider and run parallel to the hill (if you're not yet airborne). If you're already in the air, be sure you are clear of other gliders and the ground before you start correcting any error!

Counterbrake / weightshift to the opposite side and pump the knotted side with your brake. Be careful not to fly too slow to avoid a stall or spin. If the knot or tangle is too tight to pump out, immediately fly to the landing zone and land safely.

Tow launch

The Boomerang has no tendencies towards deep stall/parachuting. Therefore we allow tow launched flights with a similar technique as described above. There is sufficient margin to countersteer the glider in a normal towing situation. Make sure you use proper equipment, experienced personnel, the recommended techniques and all relevant safety precautions for towing.

Motorized flight

The Boomerang has not been certified for motorized flight at the time of writing. However, motorized flying has been made with great success due to its very easy take-off characteristics, high performance, stability and extraordinarily good handling. Always use certified combinations of engine/harness/glider. Always check with your federation if in doubt.

Flying the Boomerang

Once in the air you can enjoy the superb performance, high stability and safety of the Boomerang. Not only does it have fairly high trimspeed, but due to an optimised combination of airfoil and air inlets, it accelerates forward with every disturbance in the air. The handling in turns is direct and well coordinated in all axes. The climbing ability in thermals is as good as glide. Minimum sink is very low and useable even with a lots of brake input because of the flat polar curve. In comparisons we have found that this glider excels in overall performance against most competition gliders from last year. It is indeed a step into the 21st century and we are proud to have you take part in it.

In turbulence

The Boomerang has a high internal pressure, resistance to tucking and a very high degree of passive safety. It is however still high performance glider that, despite being among the safest in its class, demands an active flying style. The key to active piloting is keeping the glider above your head at all times. If it falls back behind you, let up the brakes. If it surges in front of you, counter brake until the surge is controlled. While thermalling in strong conditions, you will sometimes find it necessary to raise the angle of attack temporarily on the outer wing to avoid a deflation because of downstreaming air on the outside of the thermal. Always let the glider regain airspeed after such an action. When thermalling in weak or broken conditions, you will find the Boomerang a very easy glider to fly; it will support the pilot with a very well behaved and effective character in coring all those elusive thermals.

Flat spin

In normal thermal flight, you are very far from the limits of a flat spin. Nevertheless, should this occur, just let up the brakes and wait for the glider to regain forward speed. A deflation might sometimes occur exiting a spin. Take appropriate action against it according to the descriptions below.

Asymmetric deflation

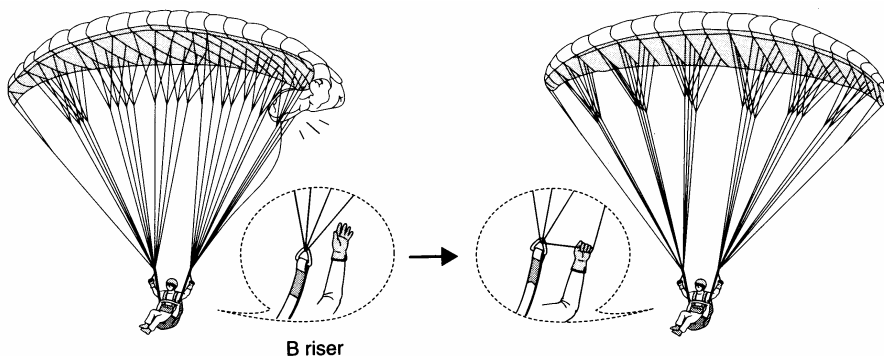
In the event of encountering strong turbulence and suffering an asymmetric deflation, the Boomerang will easily keep its flying direction by applying a little force on the opposite brake. If you pump the deflated side with a big pumping motion (0-100% of the brake travel), or hold the brake on the deflated side all the way down, the deflation will promptly come out. Remember to let the glider regain its flying speed after it has reinflated

Frontal deflation

If you feel it coming, first step off the speedbar. You may have to quickly pull both brakes all the way, but for no more than one second, to avoid the deflation. Regain airspeed. If a deflation has already happened, you might quickly pump both brakes to help it come out quicker. If you don't take action, it will come out by itself within a few seconds. The glider does not respond with a deep stall. When counterbraking, be careful not to stall the glider.

Cravatte/glider wrapped around lines

Counterbrake/weightshift and pump brake on the tangled side. Keep safe flying speed to avoid stall or spin. On all Gin gliders, there is a separate stabilizer/winglet main line that goes down to the B riser. This line usually comes slack in the event of a "cravatte". Pull it down completely until it comes tight and the "cravatte" normally comes out.



Cascade of events

Many reserve deployments are a result of a cascade of overcorrections by the pilot. Please note that overcorrections are many times worse than no input at all.

As an experienced pilot once put it: "overcorrection is the mother of a spin".

If you have altitude, stay cool. If you don't – better throw your reserve one time too many than never again.

On materials

All modern gliders are built with as much of a safety margin as possible. The Boomerang is tested to more than 8 times its maximum load (8G's) and passed without remarks. However, modern glider design has reached the level where material stretch / shrink has become a relevant factor.

No such changes occurred during extensive testing of the Boomerang. Do take into consideration that every extreme maneuver can, in time, damage the glider. This includes spirals, B-stalls and big ears.

If you do notice any change in performance or handling of your glider, please have it checked by an authorized dealer or the manufacturer.

Losing altitude

Should you encounter a situation where you need to descend quickly or the lift becomes too strong, there are several ways of quickly getting down.

The best way is of course, to find sink. This is often forgotten in a situation of stress - leave the lift!

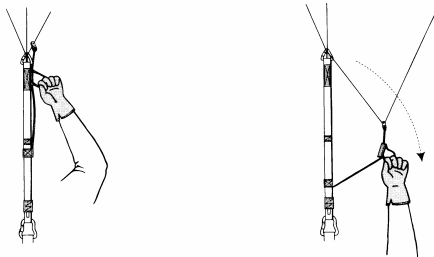
Here are some examples on how to get down fast. We recommend you try them out under qualified supervision during a safety training course over the water.

Big ears

Although the noise of the wind around your ears may imply it, the *groundspeed* does not improve with big ears. On the contrary, flying with your glider's "ears" in will decrease your maximum ground speed by about 6 km/h. It is however a safe method of moderately losing altitude while maintaining some forward speed.

Pull in big ears with the outer A line on each side. Reach high into the lines and pull outwards downwards. On releasing the lines, you might pump out the big ears with Boomerang: they will only slowly come out on by themselves.

If necessary, keep the big ears in until you flare for landing instead of letting them out on the approach. This is a safer method because of a possible wind gradient and your low airspeed/high wing loading with big ears in.



Spiral dive

The Boomerang has a very effective spiral dive. Weightshift and pull the brake on one side slowly. Let it accelerate for two turns and enjoy the roaring wind and high G-force. You can achieve sink rates of up to 20m/s this way. Once you have entered the spiral you can control your descent rate and bank angle with weight shift and the outer brake.

WARNING! A pilot not accustomed to spiralling and/or dehydrated, can quickly lose consciousness in a steep spiral dive! Practice spiralling with caution and lesser sinkrates to get a feel for the Boomerang's behaviour. When exiting a steep spiral dive, let it decelerate for one or two turns with outer brake applied and/or weight shift to the outside to avoid big pendulum effects and deflations.

B-stall

To quickly lose altitude without straining your body with G-force you can use the B-stall. Reach up to the B-risers just below the maillons and twist your hands while gently pulling. It will be difficult at first, but become lighter the more you break the airfoil. Once pulled, do not release immediately. The glider needs to settle into a stable B-stall before releasing. On exiting the B-stall the Boomerang has a very gentle dive without deep stall tendencies, even on a slow release of the risers. We advise you to release the B-stall symmetrically with both hands.

Deep stall (parachuting, stable stall)

The Boomerang does not have a tendency to stay in a deep stall. Should this nevertheless occur, put your hands on the A risers and push forward to gain speed. On some modern harness/accelerator setups, you can operate the speedbar without using your hands. If so, push the speedbar. Never try to steer out of a deep stall.

Fullstall, dynamic stall

You will find your Boomerang to have a smooth stall without big pilot pendulum forwards. The surge upon release is moderate. The gliders are tested without wraps. Keep your hands close to your body during the stall. Before releasing the stall, raise your hands slightly to fill the glider with air. Let the brakes up when the glider is in front of you to avoid an excessive surge. Counterbrake the dive quickly and release the brakes to regain airspeed. Never attempt a stall and then change your mind and release the brakes, as the glider will surge and you might end up in the sail. This goes for all paragliders.

Steering without brakes

If a brake for some reason is not operational, you can steer the Boomerang with the D-risers. Add steering input by weight-shifting in your harness. Be careful not to steer too much with the riser, as a spin might occur.
Airspeed, airspeed, airspeed.

Aerobatics

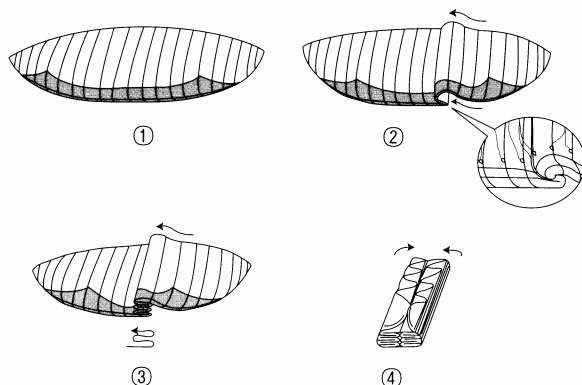
Despite its good handling, the Boomerang is not designed for aerobatics.

Landing with the Boomerang

The travel of the brakes is enough for a clean stall in normal conditions without taking wraps around your hands. The low min. Sink and flyable min. Speed will help you to make a soft landing in all conditions. Remember, this is a dynamic high performance glider. Don't do your last turn too late or too steep. It is easy to misjudge your speed and altitude.

Packing instructions

We advise you to pack the glider "accordion wise". See drawing. This kind of packing procedure may take slightly longer, but conserves the rigidity in the profile reinforcements and the Rigifoils and is worth it in the long term. You will enjoy unadulterated performance, top speed, ease of take off and tuck resistance for years ahead. Sounds good, huh?



Care and maintenance

Care should be taken with the small reinforcements of the Rigifoil System. They are generally very resistant, but should they become damaged, they can be replaced easily by an official GIN distributor or dealer.

If a line is damaged, please consult your dealer and have it replaced. The kevlar inside the sheath can take lots of pulling force without stretching, but is sensitive to bending with small radius. Damage is not always easy to see, so pre-flight check your glider meticulously. When not in use, store the glider in a dry place out of the sun. Take caution when transporting together with gasoline or solvents in a vehicle.

Your Boomerang doesn't like taking a bath in salt water. If it has, take it home and soak it in the tub immediately. Be careful if it is full of water when lifting. Let the water out first - then lift. If you want to clean spots, do so with lukewarm water and a small amount of soap if needed. No strong detergents! Use a soft sponge or cloth to avoid scratching the surface. Let it dry in a ventilated space, preferably out of the sun, any time your glider gets wet.

Inspection

Your Boomerang should be fully inspected by an authorized Gin agent after every 100hr flying time or every year, whichever is sooner. A full inspection will not only give you peace of mind but is required by AFNOR and DHV to retain certification.

Safety, liability and flying

Any activity can result in serious personal damage or even death. Remember that flying is considered a high-risk sport. Traffic rules are easy to understand because you see the road. Flying in the invisible air you have to use your judgment and experience. Lack thereof easily causes accidents.

Neither the manufacturer nor distributor for this paraglider can be held responsible for any damage you sustain to yourself and/or others. This includes objects and third parties.

To fly this equipment you should:

- Be in your right mind, unaffected by alcohol or other drugs.
- Have read and understood this owner's manual.
- Have completed appropriate training and have the required experience for this class of glider.
- Wear head protection, use a certified harness and emergency parachute.
- Only fly in conditions suitable for your level of paragliding.
- Make a thorough pre-flight check.
- Use a suitable launch and flying site.
- Have the necessary insurance and licences.

"Designing paragliders is a personal journey of challenge and discovery, an ongoing search for perfection."

-- Gin Seok Song

While every effort has been made to ensure that the information in this manual is correct, please remember that it has been produced for guidance and information only and should not be used as a "how to fly" manual.

This owner's manual is subject to changes without prior notice.

TECHNICAL DATA

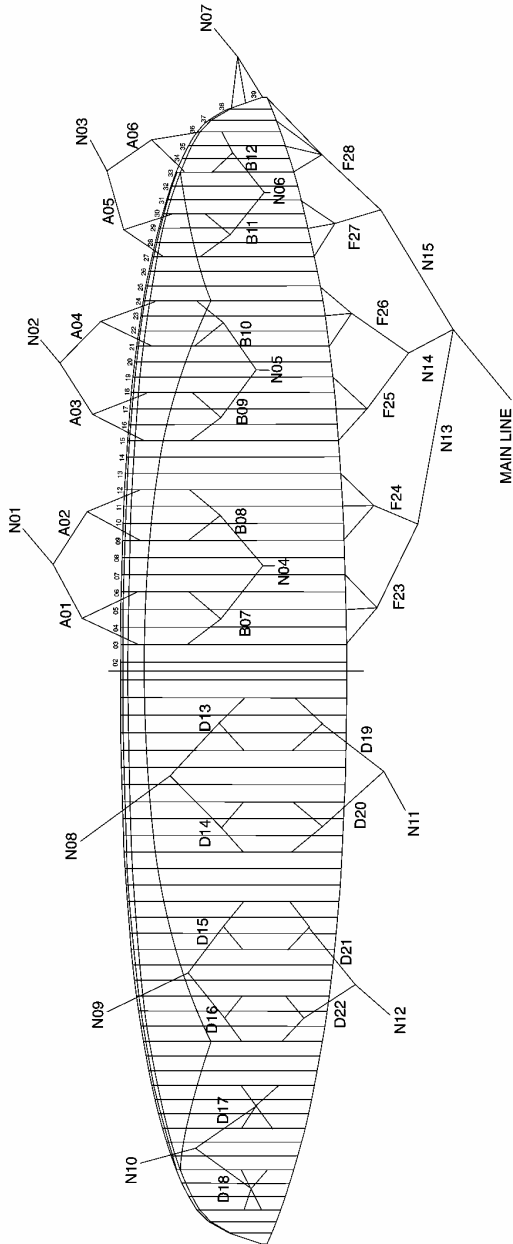
boomerang

SIZE		S	M	L
FLAT	AREA	24.53m ²	26.62m ²	28.79m ²
	SPAN	12.34m	12.86m	13.37m
	A.R	6.21	6.21	6.21
PROJECTED	AREA	22.19m ²	24.08m ²	26.04m ²
	SPAN	9.67m	10.08m	10.48m
	A.R	4.84	4.84	4.84
CHORD	ROOT	2.45m	2.56m	2.66
	TIP	0.10m	0.11m	0.11m
TOTAL HEIGHT		7.96m	8.30m	8.63m
CELL NUMBER		25 × 3	25 × 3	25 × 3
GLIDER WEIGHT		6.9kg	7.5kg	7.9kg
WEIGHT IN FLIGHT		75-95kg	90-110kg	105-125kg
AFNOR		COMPETITION	COMPETITION	COMPETITION
D.H.V				



G I N

LINEPLAN Boomerang (XS,S,M,L)



DESCRIPTION

1. FABRIC OF CANOPY

1-1 UPPER AND LOWER SURFACE

FABRIC CODE		9092W/R	9092ME
SUPPLIER	NAME	N.C.V INDUSTRIES	
	ADDRESS	L'Isle d'Abeau, Parc de Chesnes, 75, rue du Ruisseau 38070 SAINT QUENTIN FALLAVIER Cedex / France	
FINISH IDENTIFICATION		W/R(PU coating)	ME(PU coating)
COMPOSITION		POLYAMIDE 6.6 HIGH TENACITY	
WEIGHT(g/sqm)		45	
WIDTH(cm)		152	
CONSTRUCTION		Rip Stop	
BREAKING STRENGTH (DaN/5cm)	WARP	40(mini)	
	WEFT	33(mini)	
Elongation on bias 3 lbs (%)		4	
Elongation on bias 5 lbs (%)		10	
Elongation on bias 10 lbs (%)		20	
TEAR STRENGTH (DaN)	WARP	1.5(mini)	
	WEFT	2(mini)	
AIR Permeability p=2000Pa (l/SQMXMN)		40(maxi)	

1-2 LOAD BEARING RIBS

FABRIC CODE		9092 FM
SUPPLIER	NAME	N.C.V INDUSTRIES
	ADDRESS	L'Isle d'Abeau, Parc de Chesnes, 75, rue du Ruisseau 38070 SAINT QUENTIN FALLAVIER Cedex / France
FINISH IDENTIFICATION		FM(PU coating)
COMPOSITION		POLYAMIDE 6.6 HIGH TENACITY
WEIGHT(g/sqm)		45 +/-3
WIDTH(cm)		158
CONSTRUCTION		Rip Stop
BREAKING STRENGTH (DaN/5cm)	WARP	40(mini)
	WEFT	33(mini)
Elongation on bias 3 lbs (%)		1,5 (+/-0,5)
Elongation on bias 5 lbs (%)		2(+/-1)
Elongation on bias 10 lbs (%)		4(+/-2)
TEAR STRENGTH (DaN)	WARP	1 (mini)
	WEFT	1 (mini)
AIR Permeability p=2000Pa (l/SQMXMN)		100 (maxi)

1-3 NON LOAD BEARING RIBS AND V-RIBS

FABRIC CODE		9017 ME
SUPPLIER	NAME	N.C.V INDUSTRIES
	ADDRESS	L'Isle d'Abeau, Parc de Chesnes, 75, rue du Ruisseau 38070 SAINT QUENTIN FALLAVIER Cedex / France
FINISH IDENTIFICATION		ME (PU coating)
COMPOSITION		POLYAMIDE 6.6 HIGH TENACITY
WEIGHT(g/sqm)		39 +/-2
WIDTH(cm)		158
CONSTRUCTION		Rip Stop
BREAKING STRENGTH (DaN/5cm)	WARP	41(mini)
	WEFT	35(mini)
Elongation on bias 3 lbs (%)		5
Elongation on bias 5 lbs (%)		13
Elongation on bias 10 lbs (%)		25
TEAR STRENGTH (DaN)	WARP	3 (mini)
	WEFT	3 (mini)
AIR Permeability p=2000Pa (l/SQMXMN)		40 (maxi)

2. SUSPENSION LINE

MATERIAL		ARAMID(TECHNORA)		
SUPPLIER	NAME	TEIJIN LIMITED, JAPAN		
	ADDRESS	1- 1, UCHISAIWAI-CHO 2-CHOME, CHIYODA-KU, 2- TOKYO 100, JAPAN		
DIAMETER(mm)		1.1	1.3	1.6
YARN COUNT		1,000D	1,000D	1,000D
NUMBER OF CORE		4	5	9
BREAKING STRENGTH		80kg	100KG	180kg

3. REINF-ORCEMENT

FABRIC CODE		P260 1.0 UVM		
SUPPLIER	NAME	DIMENSION-POLYANT Gmbh		
	ADDRESS	Speefeld 7 - D-47906 Kempen – germany		
MATERIAL		POLYESTER SCRIM		
STYLE		P260		
FINISH		1.0 UVM		
WEIGHT (g/m2)		283		
CONSTRUCTION		150P * 150P FILM 150P * 150P		

4. RISER

MATERIAL		HIGH TENACITY POLYESTER YARN
SUPPLIER	NAME	TECHNI SANGLES, FRANCE
	ADDRESS	13, RUE DO PILAT-42400 ST CHAMOND, FRANCE
WEIGHT(GR/M)		25
BREAKING STRENGTH		1,100DAN
WIDTH(mm)		22mm

5. MAILLONS

MATERIAL		STAINLESS STEEL
SUPPLIER	NAME	ANSUNG PRECISION CO.
	ADDRESS	212-32 ANYANG 7 DONG, MANANGU, ANYANG CITY, KYUNG KI-DO, KOREA
WEIGHT(GR)		12
BREAKING STRENGTH		1,000kg
DIAMETER(mm)		4.3

6. BRIDLE(ATTACHMENT LINES)

MATERIAL		NYLON
SUPPLIER	NAME	KOLON INDUSTRIAL CO.
	ADDRESS	45 MU KYO DONG JUNG – GU, SEOUL, KOREA
WEIGHT(GR/M ²)		7.2 G/M
BREAKING STRENGTH		110kg
WIDTH(mm)		13

7. THREAD

MATERIAL		HIGH TENACITY POLYESTER YARN	
SUPPLIER	NAME	AMANN & SOHNE GMBH & CO.	
	ADDRESS	INDUSTRIESTRASE 1, D-74391 ERLIGHEIM, GERMANY	
DENIER		150D/2	250D/3
BREAKING STRENGTH		2.9kg	3.2kg
WEIGHT(GR/M)		0.05G	0.083G