GIN

FLUID 2010 owner's manual - English

Thank you for taking the time to read this manual before using the FLUID.

Thank you…

Thank you for choosing the FLUID. We are confident that this Speedriding glider will provide you with countless exciting and fun experiences and will enable you to make good progression in your Speedriding career. This manual contains all the information you need to fly and maintain your glider. A thorough knowledge of your equipment will keep you safe while enabling you to maximise your full potential.
Please pass on this manual to the new owner if you do resell your glider.

Have fun !

The GIN Team

Safety Notice

By the purchase of this equipment, you accept all risks inherent with Speedriding activities, including injury or death. Improper use or misuse of GIN equipment greatly increases these risks. Neither GIN gliders Inc nor the seller of GIN equipment shall be held liable for personal or third party injuries or damages under any circumstances. The user is fully and solely responsible for the safe use of this equipment, if there is any doubt regarding the use or safety of this equipment then it should not be used.

Warning: Speedriding is a potentially dangerous activity. It is the user's own responsibility to assess all weather and meteorological conditions, the flying area, the snow conditions, all equipment, off-piste safety conditions, etc, before you use this equipment. Speedriding gliders should be used only while skiing. This equipment was not designed for any other use than that of Speedriding as described in this manual. This equipment should be launched by feet and must never be used for any of the following: Parachuting, BASE jumping; jumping from any aircraft, or high object; building, antenna, bridge, cliff, etc. You should wear a helmet as well as all safety equipments required for the practice of off-piste skiing or paragliding. It is strongly recommended to learn Speedriding in a specialised school. When Speedriding, always choose a safe, open area enabling you to keep a wide safety margin. Speedriding is strictly forbidden on ski slopes. Do not practice Speedriding in the vicinity of ski lifts, cliffs, rocks or any other hazards. This equipment requires constant care when it comes to maintenance and handling.

Summary

1. Gin Gliders

Gin Gliders was formed in 1998 by paraglider designer and competition pilot Gin Seok Song and his team of engineers and test pilots.
Gin's philosophy is simple: To design gliders that he, and any other pilot, will love to fly. This philosophy applies equally for a Speedriding glider such as the FLUID, as for the world beating competition glider, the Boomerang. No glider is released on the market without Gin's complete satisfaction.

Gin has over 20 years experience of designing and manufacturing free flight equipment, and is backed up by an equally experienced team, both within the company in Korea and throughout a worldwide network of distributors and dealers.

The GIN Team has had countless other competition successes in World Cups, World and National Championships. GIN was a pionner in Speedriding equipment and still leads the scene today. This high level of expertise provided by dedicated professionals ensures that you get the best possible product support and after sales service.

2. Introducing the FLUID

The FLUID is an Expert Speedriding glider designed by Gin Seok Song. The FLUID offers big evolution for your practice of Speedriding, unequalled behaviour in this kind of activity, with great precision in the turn and excellent manoeuvrability. This allows the pilot to feel confident while developing the active and dynamic piloting skills needed to get the most out of the best level of this sport. The FLUID will allow you to experience the full pleasure of Speedriding, at the highest level.

For pilots who...

The FLUID is a high-end Speedriding glider: It is adapted to experts pilots looking for an performent glider, able to give you the speed, the precision, the steepest angles to express the highest level in Speedriding. If your practicing level is not that ambitious, prefer the other model, the Nano, which would be more adapted to your skills.

Cutting-edge design

The take-off and handling characteristics, are the best currently on the market.
The plan form, the profile and optimised line scheme, confer exceptional behaviour to this glider as well as outstanding manoeuvrability and performance.

Manufacturing

All GIN gliders are produced in the company's own facilities using the most modern techniques. Highly skilled staff take extreme care throughout 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.

3. Before you fly

Pre-delivery Inspection

The FLUID is delivered with rucksack/harness, inner bag, compression strap, repair tape and this manual. Your instructor or dealer should have made a test inflation followed by a test flight before delivery.

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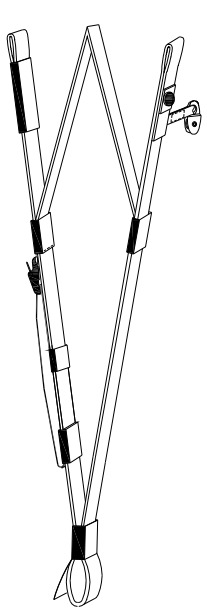
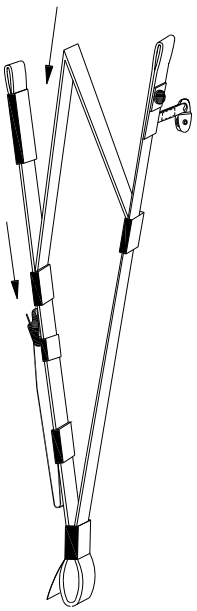
Risers and trims

The front risers of the FLUID are fitted with trimmers that enable the pilot to adapt the glider's behaviour according to his level and the chosen slope. Trimming the front risers enables expert pilots to enjoy a more reactive glider, with greater speed and lower flight angle, to follow the steepest slopes. Ask for the advice of an instructor specialised in Speedriding in order to better understand and exploit the trimming system.

Caution : The big trim range on front risers modifies strongly the behaviour of the glider. Instruction and training, as intense practicing are the keys of mastering the glider in these extrem configurations.

#8, #9,5, #11: riser	front
Neutral length	60cm
Trim range	8 cm

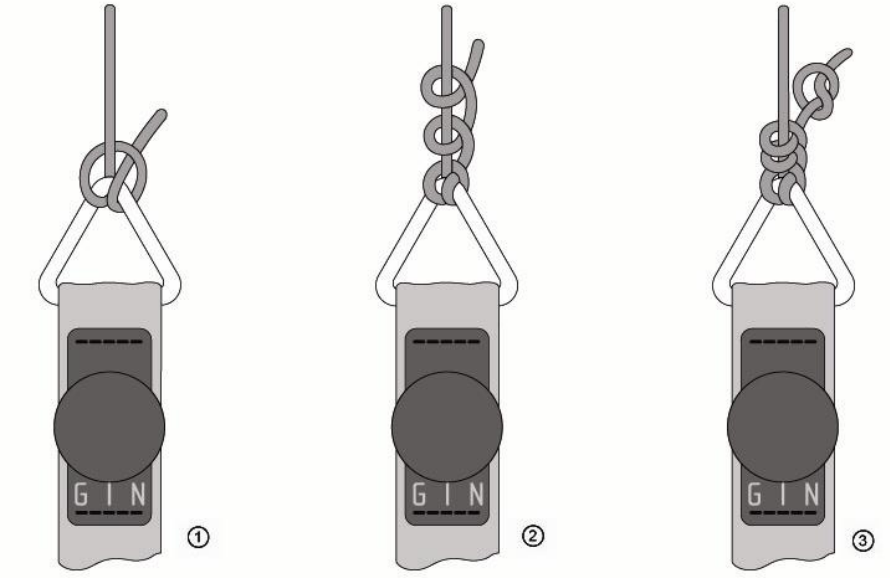




Brake line adjustment

The main brake line lengths of the FLUID are the same as on the sample that has been used by the GIN R&D team. These line lengths have been fine tuned by GIN test pilots, and it should not be necessary to adjust them.

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



Rucksack

The FLUID is delivered with the rucksack/harness FREERIDER, especially designed for ergonomic carrying comfort and ease of use.

Your harness

The FLUID was developed with the FREERIDER harness specific to Speedriding. Before using your glider with any other type of harness, please contact the harnesses' manufacturer or dealer should you have any question regarding it's use.
Adjusting the chest belt controls the distance between the carabiners of the two risers, which also has an influence on the glider's behaviour.
There is no need to use the FLUID with a tight chest belt adjustment, as there is no tendency to feel unstable.

Weight range

The FLUID should be used in the weight/level range for which it was designed. The weight range is defined according to the pilot's weight, including clothes.

FLUID		#8	#9,5	#11
Weight/ piloting level		Very expert	Expert light Very expert Heavy	Heavy expert Advanced light

Essential

In order to fly with this equipment, you should:

*Have received theoretical and practice tuition for Speedriding.

*You should have sufficient practice, the knowledge and the experience necessary to correctly use this glider.

*Have subscribed to the licences and insurances necessary for the practice of this sport.

*Be in normal physical and mental health, not be under the influence of alcohol or other drugs.

*Fly only in meteorological conditions fit for the practice of Speedriding (and adapted to your level and experience).

*Wear a helmet and all safety equipment necessary to the practice of off-piste skiing and Speedriding.

*Have thoroughly checked all your equipment.

*Be aware of all the information contained in this manual.

4. Flying with the FLUID

We recommend that you first practice inflating your glider on a small training slope with skis. Make your first flights with your new Speedriding glider in gentle conditions in a familiar area. Then keep on discovering step by step all the potential of your glider.

Preparation for launch

Following a consistent method of preparation and pre-flight checks is vital for safe flying. We recommend the following:

On arrival at the flying site, assess the suitability of the conditions: wind speed and direction, airspace, snow conditions.
Inspect your glider, harness, helmet and any other equipment.
Choose a sufficiently large take-off area with even ground and no obstacles.
Lay the glider out according to the planform, and get the lines and risers sorted out.
Put your helmet on. Secure yourself in your harness and don't forget the leg loops!
Connect the risers to your harness carabiners, ensuring there are no twists or loops around the lines.
Do a final line check by pulling gently on the risers or lines to ensure there are no new knots, tangles or interfering branches or rocks. Take extra care in nil or light winds.

Pre-flight check list

Helmet and harness buckles closed.
Lines free.
Canopy open and into wind.
Airspace clear.

Take off

The key to a successful launch technique is to practice ground handling whenever you can.

Keeping your brake handles in your hands, the FLUID inflates very easily, with or without risers in hand. Keep your arms slightly bent and hands at shoulder height. If you are using the front risers, your arms should rise in a curve. **It is not necessary to pull hard on the risers.**

Make visual check on your glider before taking off to see if it is correctly inflated and that there are no knots or tangles. If something is wrong, stop the take off. A slight pressure on the brakes and the gliding of your skis always makes the take off easier.

Minimum sink rate and max glide ratio.

The minimum sink rate can be found by pulling the brakes about 20 cm.

Accelerated flight

Once you have become accustomed to flying the **FLUID**, you can practice using the trimmers on the front risers, which enables you to increase the speed of your glider, and to decrease strongly your flight angle. Caution: when flying accelerated, your wing will react in a more radical manner in turns and the glide angle will be a lot steeper. The active flying is important in these moments.

Active Flying

The **FLUID** has a high internal pressure, high resistance to collapses and a high level of passive security. However, it is recommended with this type of glider to adopt an active handling style that will help you to fly safely. The key to active handling is to keep your glider above your head. If the glider has a tendency to lag behind, raise your hands. If the glider has a tendency to shoot forward, then control it with the brakes. In all cases, always remember to keep sufficient air-speed and avoid over-piloting. Apply the same active piloting on the groud while skiing with your canopie above, anticipating unloads.

In turbulent conditions

The **FLUID** is a very stable glider and collapses on one or both of the front risers are almost impossible. Extreme turbulence could generate a collapse but the FLUID will resume normal flight in almost all configurations, so in case of doubt, keep your hands at shoulder height and let the glider fly.

However, if the glider shoots forward violently, control it with the brakes immediately. To help your glider resume flight more rapidly, it is recommended to have an active handling, without being out of time with the wing's movements.

Caution :

The FLUID is not designed to perform manoeuvres outside the normal flight configuration. Our test pilots have tested the various reactions in extreme situations; however we strongly recommend that you do not perform stalls, manoeuvres and spins. It is also strongly recommended not to fly aerobatics with the **FLUID**.

Landing with the FLUID

Choose a landing area free of obstacles. It is recommended to flair correctly, it will enable you to obtain a nil vertical speed and to slide on your skis. Do not make your last turn at low height, or make a radical turn close to the ground.

5. Care, Maintenance and Repairs

The materials used in the FLUID have been carefully selected for maximum durability. Nevertheless, following the guidelines below will help keep your 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:

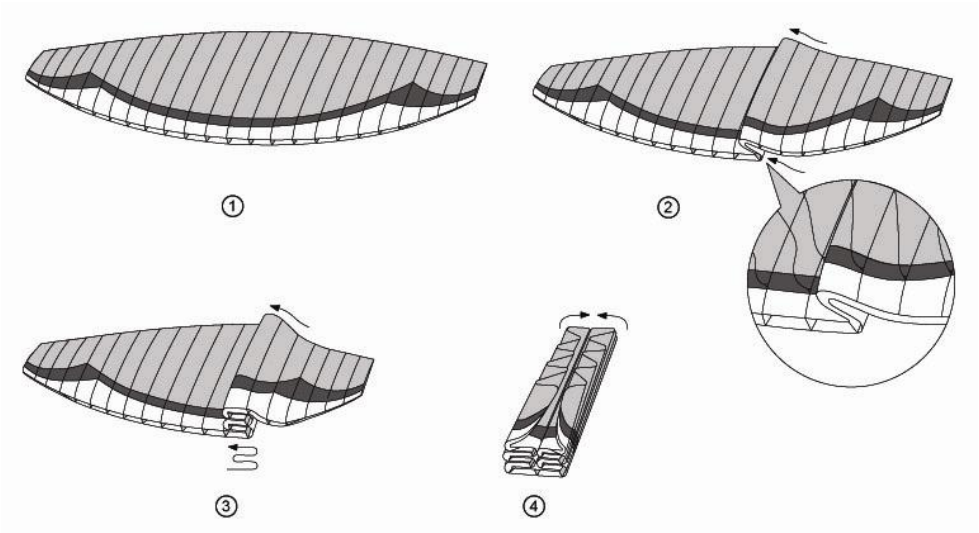
- Violent shocks to the upper surface (e.g. when the canopy crashes to the ground leading edge first whilst ground handling).
- Dragging the glider along the ground.
- Stepping or skiing on the lines or canopy. Dyneema, the core material of the lines, is very strong, can take high loads without stretching, but is sensitive to heat.
- Opening your wing in strong winds without first untangling the lines.

UV damage

Avoid leaving the glider out in the sun unnecessarily. UV rays from the sun degrade glider cloth.

Packing instructions

We advise you to pack the glider “accordion wise” as shown in the drawing. This packing procedure takes slightly longer and is easier to do with an assistant, but it conserves the rigidity in the profile reinforcements.



Since folding the glider weakens the materials, pack the glider as loosely as possible.

Transport and Storage

Moisture is the worst enemy of your glider, adversely affecting the ageing of fabric, lines and reinforcements. The FLUID should therefore be kept dry and cool. Do not pack the glider away for a prolonged period if it is damp, sandy, salty, or if other objects have entered the cells. Always allow it to dry naturally before storage in a dry room. Leave the rucksack zip open whenever possible to allow residual moisture to evaporate, and do not transport or store the glider in the proximity of chemicals such as gasoline, paints or other solvents.

Cleaning

Use only lukewarm water and a soft cloth to clean your wing. Never use any abrasive materials or detergents. Only clean the wing if it is absolutely necessary e.g. after a landing in salt water.

Maintenance Inspections

GIN Gliders recommend that the FLUID is inspected by an authorized Gin agent after every 100 hours flying time or every year, whichever is sooner.

The maintenance instructions, which can be downloaded from our homepage www.gingliders.com, have to be observed.

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.

You should also check for any damage to your lines, sail, risers and connectors before each flight.

Repairs

Very small holes in the sail can be repaired with the sticky-backed ripstop 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.

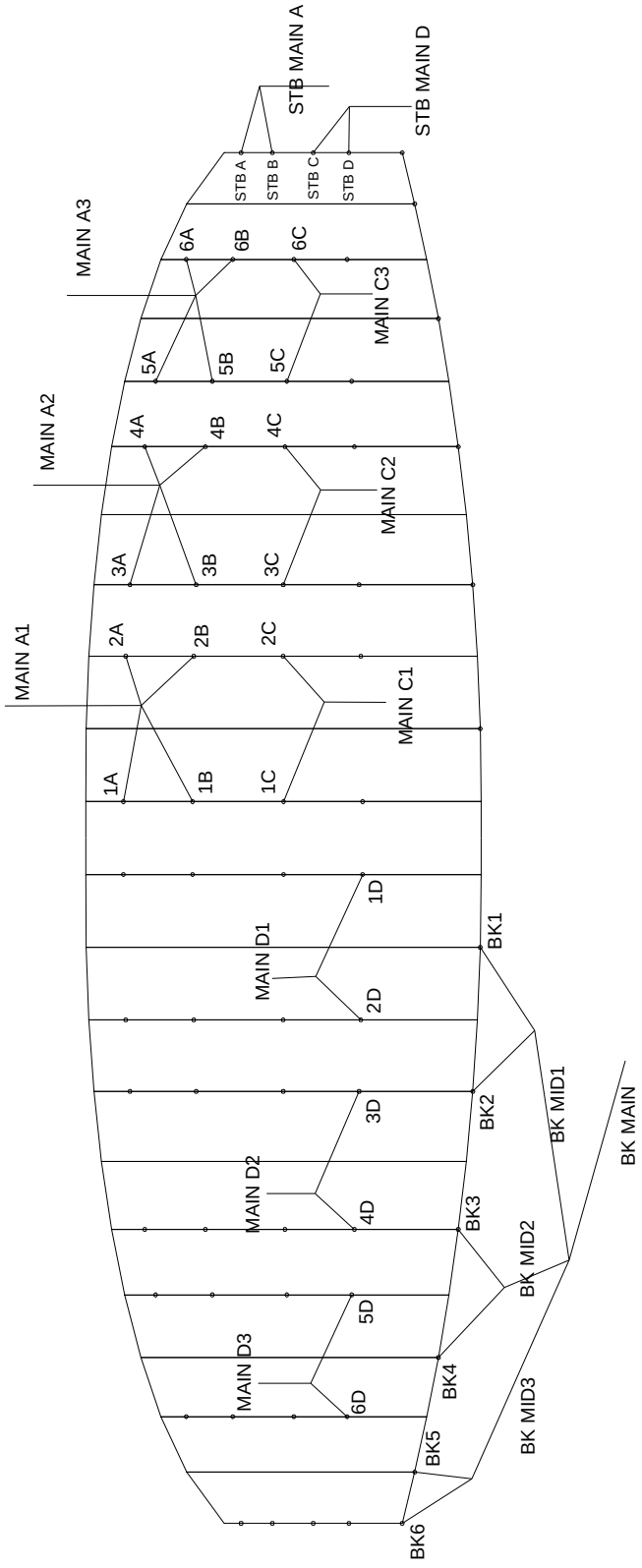
Major repairs, such as replacing panels, should only be carried out by the distributor or manufacturer.

6. Reference

Technical data

SIZE		8	9.5	11
FLAT	AREA	8.0m²	9.5m²	11.0m²
	SPAN	5.49m	5.98m	6.44m
	A.R	3.8	3.8	3.8
CHORD	ROOT	1.70m	1.86m	2.00m
	TIP	0.76m	0.83m	0.89m
TOTAL HEIGHT		3.35m	3.65m	3.93m
CELL NUMBER		21	21	21
GLIDER WEIGHT		2.2kg	2.3kg	2.4kg
PILOT WEIGHT(kg) / LEVEL		very expert for slalom	expert for freeride	very advanced / heavy expert

Line Plan



Line material	
Upper line	Cousin 16350
Main line	Cousin 16650
Brake Main	GIN Dyneema 2.3

Description

1. FABRIC OF CANOPY

SUPPLIER	NAME	DOMINICO TEX
	ADDRESS	641-11 Dungchondong Kangseogu Seoul Korea
TYPE OF FINISH		SIDE COATED
TYPE OF YARN		NYLON 6.6 HIGH TENACITY – 30 Denier
FABRIC CODE		3RS
PATTERN		Rip Stop
Coated fabric's weight (g/sqm)		43+2
Tear Strength	WARP (DaN)	3.6 Max
	WEFT (DaN)	4.1 Max
Elongation on bias 3 lbs (%)		11.5 Max
Elongation on bias 5 lbs (%)		17.5 Max
Elongation on bias 10 lbs (%)		25.5 Max
Break Strength	WARP (DaN/5cm)	42 Max
	WEFT (DaN/5cm)	43 Max
AIR Permeability p=2000Pa (l/SQMXMN)		40 Max

2. SUSPENSION LINE

MATERIAL		Dyneema	
SUPPLIER	NAME	COUSIN TRESTEC	
	ADDRESS	8, rue Abbe Bonpain – BP70020 Wervicq Sud - 59558 COMINES CEDEX - FRANCE	
NAME		Top Line 16350 Utimate (top line)	Top Line 16650 Utimate (lower line)
DIAMETER(mm)		1.12	1.65
BREAKING STRENGTH		172kg	320kg

3. REINFORCEMENT

FABRIC CODE		W420 SCRIM
SUPPLIER	NAME	PORCHER NCV Industries
	ADDRESS	L'Isle d'Abeau, Parc de Chesnes, 75, rue du Ruisseau 38070 SAINT QUENTIN FALLAVIER Cedex / France
MATERIAL		POLYERTER SCRIM
WEIGHT(GR/M²)		180
BREAKING STRENGTH (KG/5Cm)	WARP	137
	WEFT	118
TEAR STRENGTH (KG/5Cm)	WARP	4.2
	WEFT	4.1
WEAVE DESIGN		RIPSTOP

4. RISER

MATERIAL		POLYERSTER TAPE
SUPPLIER	NAME	Güth & Wolf GmbH
	ADDRESS	Herzebrockerstr. 1-3 D-33330 Gütersloh GERMANY
WEIGHT(GR/M)		34
BREAKING STRENGTH		1,100DAN
WIDTH(mm)		20mm

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	SUKWANG FABRICS
	ADDRESS	52-2 Yujungri, Dochukmyun, Kwangjusi, Kyungkido, Korea
WEIGHT(GR/M)		7.2
BREAKING STRENGTH (kg)		110
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

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

- Gin Seok Song

Every effort has been made to provide you with important and useful information in this flight manual. However, please remember that this is not a book made to teach you how to fly, and that courses in a certified professional school are necessary for the safe practice of Speedriding.

This flight manual may be amended at any time without any prior notice. Please visit our website www.gingliders.com for all the latest information regarding the FLUID and all GIN gliders' products.