Paramania Fusion Powerglider Owner's Manual

Contents

1.1 Introduction

Paramania feels privileged that through its products, the Reflex MK1 & 2, the Action, Action GT, Revolution and Go-Fly, to have progressively improved levels of safety, speed, performance, handling and use-ability for our sport, paramotoring.
Our designer, Mike Campbell-Jones has worked to develop Reflex technology in soft wings, since designing the original Reflex wing in 1994. His experience has given him and the Paramania team an edge, the ability and insight to design wings that consistently bring new technology to the foreground.
The Fusion is no exception. It is the first of a new species, a hybrid. A truly innovative Powerglider!

Fusion /ˈfjuːʒən/ phonetics - definition from Cambridge English dictionary
When two or more things join or become combined - nuclear fusion

The Fusion is a pure intermediate powerglider, combining all the proven elements of performance, technology, stability and safety, from the Paramania range.

We love it and know you will to, congratulations for choosing the Fusion.

1.2 About this manual – *This manual is to help you understand, please read it carefully and regularly!*

The purpose of this manual is to offer guidelines to the pilot in the use of the Paramania Fusion powerglider and is in no way intended to be used as a training manual for this or any other paramotor wing or paraglider. You may only fly an aircraft of any description when qualified to do so or when undergoing training from an accredited School or Instructor.

It must be understood that flying can be a dangerous activity unless undertaken by properly trained people flying in a responsible and disciplined manner. As the owner of a Paramania Fusion Powerglider, you have chosen to fly one of the safest aircraft of its type available.

Nevertheless, in the final analysis, any aircraft is only as safe as the pilot flying it and it is incumbent upon you to make sure that you have the required training and experience to make your own judgements about how, where and when you fly.

Particular attention must be paid to the danger of injury to the pilot and bystanders from a rapidly rotating propeller, which can break and inflict injury at some distance and the dangers inherent with flammable fuel and other combustible or fusible materials.

Paramotoring (powered paragliding) is a relatively new activity that is still evolving. Should you have any doubts about the suitability of the wing for the type of flying you wish to practise or should you wish to extend your flying in other ways. We recommend that you seek further guidance from your own instructors or direct from Paramania. Under no circumstances should you attempt to copy the type of flying that may have been demonstrated to you or that appears on any video demonstration of the wing without first receiving proper aerobatics training from Instructors experienced in the use of this wing.

It is essential in order to achieve satisfactory performance that proper consideration is given to the matching this powerglider with a suitable harness, motor and propeller. While we can make recommendations, the choice and suitability of any particular harness or motor remains outside our control and responsibility.

Paramania, its Directors, Employees and Agents can accept no liability for any consequences arising from the use of their products howsoever caused.

1.3 YOUR FUSION POWERGLIDER (some FAQs)

Within our sport there are limits. For instance there is a limit of how fast you can fly and still be able to foot launch. Whilst; Paramania and team are renowned for extending the flight envelop of paramotoring. Recently we have focused on making wings easier to launch and handle, as well as safe performance. The Fusion is a direct result of this research.

About the Fusion's new aerofoil section

The Fusion has the very latest in MCJ pitch positive "Reflex" wing sections the added performance characteristics are waiting for you to discover.

- Like most of our wings, when flown above the neutral trim position. The pilot can fly inactively, fast and with hands off toggles most of the time. However, the Fusion's unique aerofoil is carefully shape controlled by an innovative fabric gathering system.
- So when trimmed below the neutral position (slower) the Fusion moves much closer to a paraglider with similar performance of sink rate and glide ratio as any top model, also the handling becomes light and responsive, whilst still maintaining some built in Reflex pitch stability. Depending on the conditions, it can now be flown more actively with the pilot's hands spending more time on the control toggles. Its roll rate and tight turning circle are most impressive.

About CLE (Composite leading edge) system

The fusion (and the Taxi), share our new Leading Edge technology. The word "composite" describes 2 or more elements brought together to create a new material with desirable engineered properties. Our latest light weight Leading Edges, mix Dacron™ with Nylon66, which is strategically placed to work in compression. The result is a unidirectional stiffness, which holds inlets open and smoothes the Leading Edge, whilst maintaining the flexibility designed to reduce the risk of cravats. Launching is a totally new experience with this system.

Why the larger center sections (fuselage)?

There are 3 principal reasons.

1. Structurally – In general, when paragliders are constructed with increased aspect ratio, the centre chord of the wing becomes narrower, so less ridged. Increasing the volume and depth at the centre of the wing, allows us to produce a wing with a higher aspect ratio whilst keeping the same levels of stiffness as wing with less aspect ratio.
2. Aerodynamically - The larger centre cells behave as a "wing strake" or barrier. This helps to control the span wise airflow. This re-aligns the airflow, reducing induced drag and giving better directional stability. Note:- All birds and most aircraft have a central fuselage!
3. A large center rib also provides a method of linking the lines from both sides, giving faster inflation and improved launching characteristics, because the pilot weight is transferred to both sides at once, like cross bracing on a paragliding harness, but installed as an integral part of the wing.

Why the "center keel lines"™ ?

The Fusion has both sides of the wing linked through "center keel lines"™, this allows a more controlled weight shift movement from side to side. So the pilot is able to transfer weight without much deformation at the center of the wing.

In addition; linking both sides dramatically improves tuck recovery as the pilot's weight is always loaded on more than just half of the wing.

Seen here the fusion has minimum distortion at the centre during a heavily weight shifted turn.

About Reflex technology?
Paramania's design history and pioneering developments in Reflex technology (since 1994), have given us the experience to devise wing sections and trimmer systems that allow a pilot to trim safely from Paraglider to Powerglider, changing the shape of wings to match the requirements of Paramotor flight.

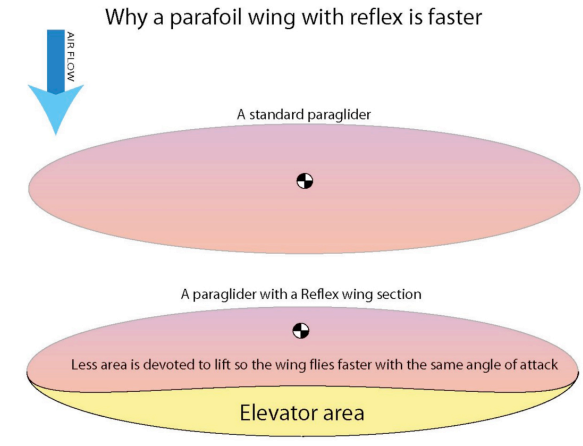
Many wing manufacturers entering the paramotoring market claim different variations of the Reflex theme – However for Paramania only one vital characteristic is important. It is most noticeable when flying through turbulent air or thermal activity, so when a lifting and descending air masses are encountered.
Example:-

- A Reflexed wing will pitch forward on entering and rearward on exiting a thermal.
- A normal paraglider wing will pitch rearwards when entering and forwards on exiting.

These opposing reactions are very clear and apply to any aircraft trimmed positively as opposed to negatively. All are trimmed positively; otherwise the aircraft's pitch stability would depend totally on pilot input, to prevent tumbling.
In the case of normal paragliders most are negatively trimmed and despite some built pendulum stability, their pilots need to learn to fly actively otherwise their wings may easily collapse in rough air.

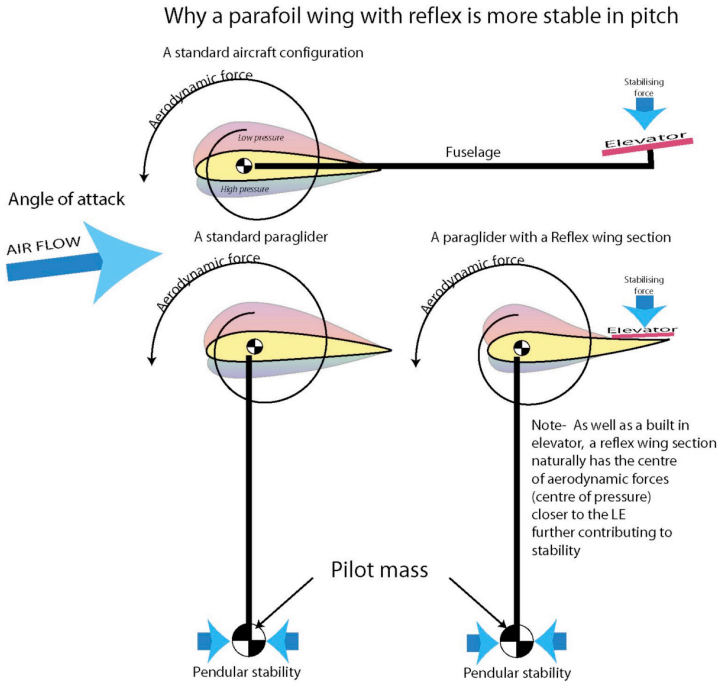
It has now become clear that without the introduction of Reflex technology or pitch positive wing sections, the necessary pilot skills required to fly normal paragliders with engines at low level in turbulent conditions, would certainly have resulted in many more accidents. In fact Reflex is possibly the single most important reason why our sport has been able to evolve; It has become a vital part of the safe development of paramotoring flight.

So… what does Reflex mean exactly..?
Reflex technology refers to a specific type of wing section, which has built in pitch stability. It was originally developed for tail-less aircraft (where **no** fuselages or elevators were fitted). When introduced into a paraglider type wing it gives desirable pitching characteristics. As a result more than 50% of wings used for paramotoring are now Reflex wings. The reason is simple – A reflex wing is pitching positive, where as most standard paraglider designs are not!
It is a wing section is that has an elevator built into its shaping, so is auto-stable and pitch positive.
See diagrams below "A Reflex wing section"



Whilst sink rate is reduced (not a problem with power), the glide and efficiency at speed is improved because the area flown on, has an effective higher aspect ratio, which gives a flatter polar curve
Eg Reflex wing sections = more stability and efficiency at higher speeds

Note:- Some of the latest developments in reflex technology are in the control of the elevator area using intricate systems that improve slow speed flight characteristics, so giving the best of both worlds with a wider range of speed and performance



1.4 Pilot skill level - recommendations

As a pilot we feel that you are likely to continue growing into this wing for several years.
The Fusion can adapt to suit the conditions and type of flying its pilots wish for.
Basically, you the pilot in control may need to adapt, to fully understanding and appreciate exactly what this wing is capable of.
For this reason – Although the Fusion may be suitable for some exceptionally natural new pilots,
Paramania recommends a minimum level of pilot experience of at least 40hrs and/or one full year's season of flying.

2.1 Design

The Fusion has been designed by Mike Campbell-Jones. His history in the development of powergliders that exclusively use Reflex wing sections, coupled with his experience in Microlight aircraft and glider design, means that your Fusion wing benefits from a wealth of knowledge that spans over 30 years, back to the early days of hang-gliding.

Microlights where initially developed as powered hang-gliders that later favoured more powerful engines and smaller more stable wings. It soon became clear that the faster your wing, the more often you could use it!
Naturally it follows, that the concept of a utility Paramotor flying machine requires the same philosophy. So the pilot can spend less time and effort flying actively, in response to every lump and bump and more time navigating, whilst getting comfortably from A to B or performing other tasks, such as photography, observation or general flying.

Although your Fusion wing has been designed to fly like a conventional paraglider, the reflex wing section means that it has an elevator built into its shape. The wing no longer completely dependents on payload as its only source of stability, It maintains its own attitude in pitch, rising and falling through thermals and turbulence, whilst remaining stable above the pilot's head, requiring minimal control input.

The trimmer system allows you to raise the rear of the airfoil, effectively reducing the chord and surface area by some 30%, giving the wing a higher wing loading and increased speed without changing the angle of attack. The centre of pressure also moves forward adding further to the pitch stability. This redistribution of loading gives the wing exceptional tuck-resistance and increases the working aspect ratio the result is a faster, more efficient wing under power and at speed, much like a traditional powered aircraft.

When requiring more lift at lower speeds, the rear section can be trimmed down to restore a fully flapped Reflex airfoil, the Fusion changes its characteristics, becoming closer to a conventional paraglider with smooth sporty handling, short slow take offs and steep climb outs. So like having two wings in one.

2.2 Construction

We produce our wings with Gin gliders based in Korea, Gin's renowned precision and quality is clearly visible in all of our wings and like all Gin's products our wings carry a lifetime guarantee.

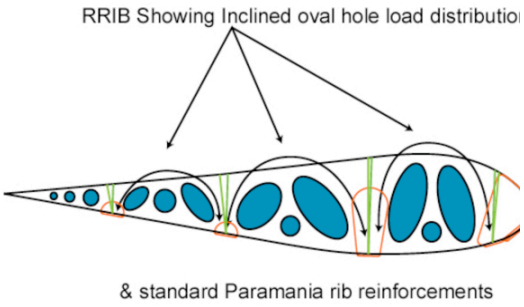
Your Fusion's strength and durability has been achieved through careful choice of modern materials and innovative design. All materials from which it is constructed are batched and every stage in its manufacture can be traced to a named operator and checker.

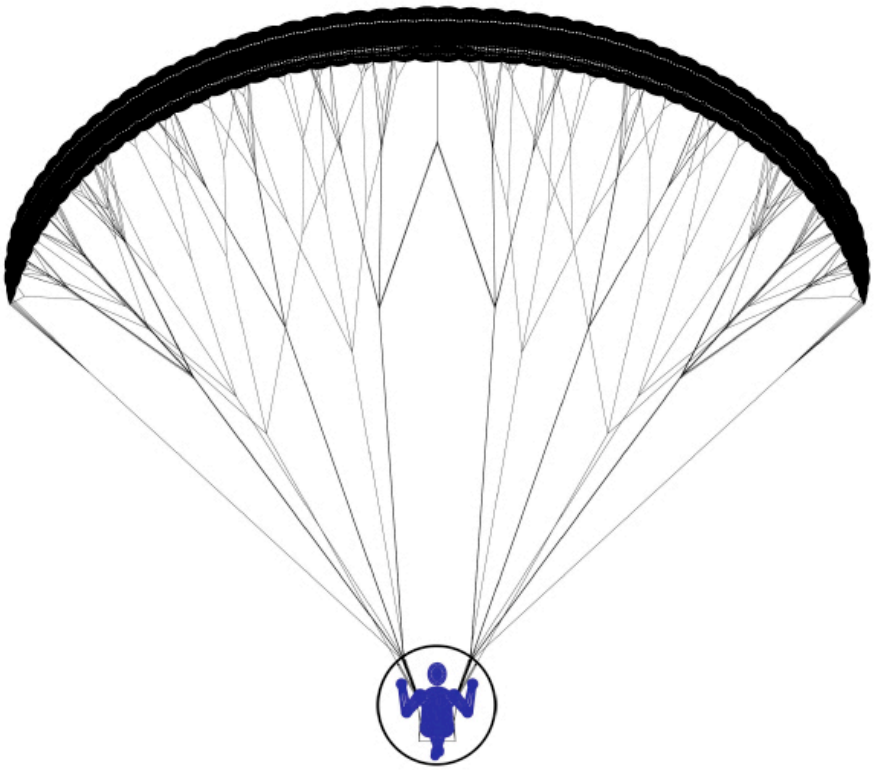
The top and bottom surfaces are made from the hardwearing Porsha-Marine NCV, 44 and 37gm respectively. The wing tips, leading and trailing edges are reinforced using a mix of load tape and Mylar. The semi-closed leading edge improves the air-dynamics, whilst stabilizing lateral movement between surfaces, giving it a more solid/rigid feel once in the air.

The structural ribs

Have been designed with inclined oval ports that allow air to flow to the areas within the wing where internal pressure is needed most. They open like valves to increase their area during inflations when the ribs are off-loaded, and minimize distortions normally created by conventional holes and distribute the loads efficiently from the line attachment points into the top surface.

Suspension line attachments are reinforced in 3 dimensions, vertically with the main rib, then at an angle with diagonal ribs and 90 degrees with bottom surface lateral tape. The ribs are heavily reinforced with Mylar wherever the loads are substantial, i.e. around the “A” and “B’ line attachments.





The Fusions special line configuration

The Fusion has a lot of extra lines towards the tips, these lines act as net, dramatically reducing the possibility of cravats, sometimes caused by fabric passing between lines in extreme circumstances.
Also all the angles of the lines are individually calculated to act as a fabric gathering system for the complex changes of our latest Reflex aerofoil, so the Fusion can actually change its shape, much like a bird trims its feathers!

The line configuration and diagonal rib structure are sharing the same angles throughout the wing, enhancing the load distribution, whilst ensuring that the lines are evenly loaded. This we have found gives much quicker inflations.

All lines are made of Gin Arimid Technora, the latest in line technology and incorporates the best qualities of its predecessors, Kevlar and Dynema, It is both strong and flexible whilst remaining temperature stable, and less prone to shrinkages when lightly loaded.

The lines are split into 4 categories,
Quadries, Thirtaries, secondary and primaries. Line diameters are 1.1, 1.3, 1.6 & 2,3 mm respectively. The larger diameters being the primary lines,
The malions to which the lines are attached to the risers, are made of polished stainless steel, which avoids corrosion and gives excellent strength and durability. The riser material is 1.2K / 25mm polyester webbing. The main attachment points are reinforced with Cordura, to protect against wear from the karabinas.

The Fusion has been built with paramotoring in mind and when new, has a safety factor of some 50% over and above its tested loading. It has been engineered to perform to its specifications for about 400 hours. **WARNING: Humidity and/or UV exposure will drastically reduce the lifespan of your wing, always stock your wing in dry and dark area. (See section 4.1 Basic Care)**

2.3 What your new Fusion wing comes with
The Glider
User manual (CD or paper)
Paramania Ruck-sack (reversible, normal or field)
Stuff sack & compression strap
Speed bar
Basic repair kit, including spare primary A lines
Paramania accessories (T-Shirt or cap), Helmet / Prop stickers & mini wind socks x2

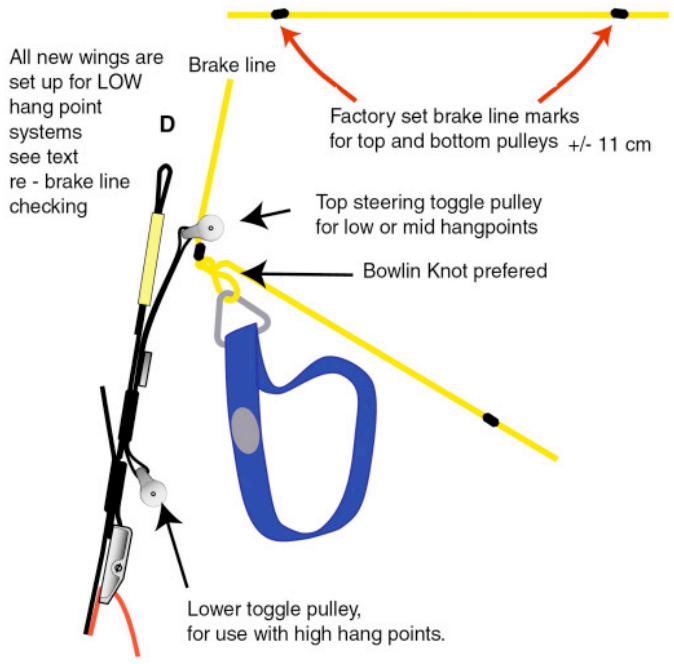
The Fusion is a high-end quality product –
As such it has been fully inspected, firstly by the factory and secondly by your local Paramania dealer.
Should you not be entirely satisfied with your Paramania Powerglider.
Please contact your dealer directly. (*And if you're happy contact them anyway :)*

2.4 Setting up the controls

Hang check
The following is best carried out by an instructor or at the very least an experienced motor pilot.
Before flying your Fusion with a motor unit, we recommend that you do a static hang test.
This is done by hanging your motor unit from an appropriate structure from the wing attachment points by using a strong rope or strap, then by sitting in the harness, get an assistant to measure up the risers from the hang points up. The aim is to make sure that you, the pilot, are able to reach the brakes whilst in flight. Allowances should also be made for the wind blowing the toggles out of reach.
Your Fusion's risers are shorter than most conventional paragliders, which reduces the potential problem.

Brake line lengths
The Fusion brake lines are clearly factory marked in two places. The risers have a secondary lower pulley system, to allow for high hang point power units These brake positions should need no adjustments *see diagram FUSION-BL01 for details*
Higher hang points require longer brake lines, lower hang point's shorter ones.

Fusion BL01 Diagram showing factory brake setting & adjustments



A useful tip, for double-checking brake line lengths.
It is better to seek the advice and assistance of a local instructor or experienced pilot.
Choose a steady breeze of about 10Kph. Ground-handle the wing above your head, with an ordinary harness or your motor unit on your back,. When the wing is nicely level, check that when the brake toggles are up against the brake pulleys that the trailing edge of the wing is not being pulled down. Then as you gently pull the brake you should have only a few centimetres of movement before the brakes start to pull down on the trailing edge of the wing. Make sure it is the same length on both sides.
Note: it is always safer to have this adjustment too long than too short.
when free flying the wing should always be set up though the top pulley and with the shorter lines

All new gliders leave the factory rigged for low hang points.

3 FLIGHT OPERATIONS

3.1 Flying With and Without a Motor

Although the design philosophy of the Fusion is that of a high-speed paramotor wing, which performs well as a free flying glider and may be flown as such with no adjustment. Slower trim settings, reduce internal air pressure and consequently give a lighter feel to the brakes and a better sink rate.
The main difference in the Fusion compared with other paragliders is the increased resistance to tucking, both on launch and in flight; its greater speed range and stability means that generally, it can be flown in stronger conditions safely. Basically the glider becomes more stable the faster you fly.

First Flights
We recommend that, to give yourself the chance to get used to it, your first flights should be made on the take off position and slower, basically below the neutral trim position, If you are used to more conventional wings, the Fusion will feel more familiar. Try flying with a small amount of brake - . In practice at the point where they just begin to feel a little heavier, this point will be encountered at about the one-quarter-brake position.
When you have become fully confident in your wing, try experimenting with faster trim-settings, weight-shift and speed bar and enjoy the extra speed and security the Fusion gives you.
See FUSIONR 02 for details

3.11 Launching

The hardest thing for any pilot with or without a Paramotor is forward launching in nil wind! Paramania have paid special attention to this area, the fusion has been designed to be exceptionally easy, it virtually comes up on its own, rarely over shoots and has excellent directional stability.
Forward launch - We recommend that when the wing is laid out, that all the lines are at full length with little or no slack between wing and pilot. Then pull the brake lines in, to ensure that the middle inflates first. The Fusion is easily inflated by using “A” riser’s only. When launching simply move forward from this position pulling on the “A” risers, whilst keeping the pressure balanced between each side (meaning the tension on the “A” risers). The glider shows little or no tendency to dive overhead, so frontal collapses which so often lead to failed launches, are rare. Instead the glider almost waits for you to catch up with it.
Note:- Indeed in certain trim positions IE take off to neutral position, the Fusion requires almost no pull on the “A”s at all, just accelerating forward movement only.
See FUSION 02 for ideal Take off trim position details

Reverse launch – Once again, the glider is very easy to launch because it does not over-shoot, so the pilot has little or no need to hold the wing back before making the turn. Reverse launches on this wing can be carried out in as little as 5 Kph.

In Flight
In flight the greater speed range of the Fusion may require some management. But once you have mastered how to use the speed to your advantage it becomes pure fun. Its tight handling allows you to make the best use of thermal cores and with a little outside brake you can achieve even flatter turns, its sink rate on full slow is comparable with most other conventional intermediate gliders. With the trim fully released, the wing takes on more solid characteristics, carving through the air with increased pitch stability, its glide at speed is impressive and so means less time spent in sinking air masses before reaching the next thermal.
With more speed, brake pressures increase as does the range of movement prior to the stall point. Turns and rate of roll are linked in a linear fashion. However at full speed WTS system or simply weight shift becomes more effective than the bakes. As a conventional paragliding pilot it may take time to gain the confidence in the wing to “let go” of the brakes, but once you do it’s a whole other world!

Use of the speed bar
The bar increases the speed by approximately 30%. Unlike most wings there is little or no loss of stability, in fact the wing seems to cut through turbulence even better than before application. However, if any instability is encountered due to excessive conditions it is recommended to release the bar for recovery and to return to normal flying mode. Speed bar is more for use during straight and level flight.
As you become more experienced, careful release of the bar whilst entering turns gives an effect, similar to pulling the stick back in a conventional aircraft.
You can use it to “surf the thermals” I.e. progressively apply the speed bar in lift and turn it into forward speed, then, you can ease off on the bar as you exit the thermal whilst entering sinking air and convert that speed into lift.
Although the speed bar can be used with confidence throughout the whole range of the trim settings, it is obviously most effective and recommended to be used with the trims off - I.e. on the fast setting.
Use of the speed bar with full trim on (slow) is not recommended and serves little of NO purpose anyway!
See diagram FUSIONR03 Speed bar diagram for more details on this subject

Landing
The Fusion has a good glide angle, so forward planning is required on approaches. During the “Flare” the brakes, light at first, become progressively heavier over a healthy amount of travel, giving plenty of warning of a stall. With trims on slow the wing lands easily, much like any other paraglider, plenty of air speed on approach, progressive flare, converting speed into lift, till the moment of touchdown. When landing with the fast trim on, the process of bleeding off the extra speed to land can take longer and require more space. In this mode there is a lot of stored energy, so you may find yourself climbing out again if you aren't that smooth on the controls. However, the brakes are very powerful, so the last bit of brake travel really shuts the wing down and slows you up.
It does not take long to develop the confidence to fly in stronger winds than normal, but great care must be taken when flying down wind near the ground. The Fusion stores energy well, so whilst it is possible to bleed off your speed without losing height before touch down, respect must be shown for the higher speeds possible.
On landing in high winds the glider may be deflated with confidence using a strong pull on the rear or D risers, or off to one side with a brake, in which case it is a good habit to watch the wing tip go down, It will save propellers etc.!

3.2 Flying under Power

NOTE: Thorough pre-flight checks for glider, harness and engine are essential prior to any launch.

For powered flight many of the characteristics are the same as in the previous section (3.1), However there is a certain amount of additional information, particularly where the addition of the thrust of the power unit and correct matching of the wing to the motor unit is concerned. Paramania cannot be held responsible for the multitude of combinations that may get used, however if you wish to contact us we can offer some advice.

3.2.a Forward Launching the Fusion in Nil Wind

While there may appear to be no wind this is rarely the case and it is essential for aircraft of this type to take off and make the initial climb out to a safe height (depending on the surrounding terrain) into wind. This makes maximum use of the wind and avoids the danger of losing airspeed when climbing out steeply through wind gradient. Particular attention must be paid to trees, power lines and other large obstacles and any rotor that they may generate.

Preparing the wing
Lay the glider out, downwind of the motor, so that the lines are fully extended and as if attracted to the motor or central focal point, then lay the risers down ready to clip in.
Set the trimmers to the take off position (Faster settings may be desirable in stronger conditions, (*see diagram FUSIONR02*). Make sure that when warming up the engine you do so upwind of the wing, and then stop it whilst clipping in.

After carrying out the following checks: -

Pilot prepared – clothing safe?
Helmet on and fastened?
Malions securely connected to risers (no twists)?
Trim set?
Nothing likely to foul the prop?
Speed bar system running freely and out of harm's way?
Steering toggles secure, brake lines free and not twisted?
Wing tip Steering (WTS if fitted) secure and adjusted correctly?
Engine delivering full power?
Airspace is clear for take off?

Attach the glider; proceed with the launch (as in section **3.11 Launching)**.
From now on you should try to control the glider whilst facing forwards. If the wing is low behind you and you turn around the lines will trail over the propeller. However, falling backwards onto the motor is both dangerous and expensive and must be avoided at all costs, even that of a few damaged lines!

During the launch, If the pressure on each of your hands feels even, open the throttle to full take off power, leaning backwards against the thrust so that the engine is pushing you along the ground rather than into it.
It is best to try and leave the brakes alone and just let the canopy come up. If it starts to go off to one side, move sideways and centre the wing. If possible try maintain the direction of your launch. If the wing starts to drop backwards, increase to pressure on both "A" risers to help it up, as you increase power, try to maintain a constant angle with the motor and smooth power control. Any sudden changes will alter your course because of the powerful gyroscopic and torque effects.

As the canopy comes up the resistance reduces. Until this happens it is best to remain moving and looking in the launch direction, whilst simply feeling the wing, normally it will stabilize over your head without overshooting. Only when you feel the resistance reduce is it a good time to check that your wing, making sure it is nicely inflated and that there are no tangles or lines fouled, however this must be done whilst on the move and without turning. Allow your run to accelerate. Feel for pressure on the brakes, gently come down on them as required to steer or to increase lift for taking off.

If the canopy is so far off to the side or behind that it cannot be recovered, kill the engine and abort the take-off and reassess the launch conditions.

Note:- So many pilots try to look at the wing as its coming up, in doing so they usually upset the launch, this is because when looking they turn their body at the same time, both changing the thrust line and asymmetrically twisting the risers.

Points to note:-

⇒ If your propeller protection cage is flimsy enough, the pressure of the lines on it during launch may distort it to the point where it fouls the prop. If this is the case make sure the lines have cleared the cage before you open the throttle.
⇒ All control inputs should be smooth and progressive.
⇒ Don't attempt to take off if the canopy isn't roughly level overhead. Dangerous oscillations may result if you apply full power with it too far off to one side.
⇒ Keep your undercarriage down until you are definitely flying!
⇒ The faster the trim setting, the more brake the glider will need to get off the ground.

3.2.b Reverse Launching in Stronger Winds

Because the Fusion launches so easily it is possible to perform a reverse launch with both front risers and one brake in one hand and the throttle and opposite brake in the other. If the wind is appreciable this is the easiest method of launching, but if the wind is light and variable, the difficulty of running backwards safely with a motor on makes a forward launch preferable.

It is wise not to open your Fusion out to the point where it is liable to be caught by the wind until you are ready to launch, especially if it is already connected to your motor.
Lay the folded glider on its back with the trailing edge pointing into the wind.
Unfold it sufficiently only to locate and untwist the risers and check that no lines have gone over the leading edge.
Extend the risers upwind as usual, separating left from right.
We suggest that you pre-twist the risers over each other half-a-turn in the direction in which you wish to turn during launch and lay them out in this position with the rear risers uppermost. This is because, once clipped in, the propeller cage on your back makes it virtually impossible to turn without assistance when the wing is on the ground.

Carry out your standard pre-flight checks now.

Having started and warmed up your motor upwind of the canopy, attach yourself to the power unit, face the canopy, approach the risers and clip them on to the appropriate malions.
Build a wall first using front and rear ("A" & "D") risers simultaneously. On uneven ground the leading edge of the canopy should be level with the horizon. We recommend that you momentarily raise the glider off the ground to check for tangles and line snags.
Holding risers, brakes and throttle control as outlined above, gently pull the front risers up to lift the glider over your head. It is unlikely to over-fly you, especially if it is trimmed to fly fast. This may be contrary to what your paragliding intuition tells you, but on the faster settings (trim neutral) the Fusion's reflex wing section stabilizes the wing and prevents it from pitching forward. It may even sit back a little but applying a small amount of brake makes it pop forward.
When the glider is steady above you, turn around, apply power and take off. As with forward launching, the trim/power/brake relationship must be established for the best rate of climb and forward speed.
Hot Pilot tip:- Turning around will be much easier if you tilt the wing slightly over into the direction you are about to rotate into.
If at any time you are not happy with your launch, you can simply abort by lowering the glider to the ground by using the rear or "D" risers.
Warning: Many pilots, particularly if they have been trained in Paragliding first get in the habit of using the brakes to abort or control their glider in windy conditions; Experience has shown us that sooner or later they **WILL** put a hand back into a spinning propeller. **Always use the rear or "D" risers instead.**

Points to Note:-

⇒ This is a cross-hands reverse launch. You must master this technique before attempting it under power. No amount of ground handling practice is enough! Your local Paramotoring/Paragliding School may also assist you here.
⇒ All control inputs should be smooth and progressive.
⇒ Don't attempt to take off if the canopy isn't roughly level overhead. Dangerous oscillations may result if you apply full power with it off to one side.
⇒ Keep your undercarriage down until you are definitely flying!
⇒ The faster the trim setting, the more brake the glider will need to get off the ground.
Speed systems may cause problems when clipping in. Don't get your lines crossed!

3.2.c The Climb Out

Once off the ground and flying safely, continue into wind using the brakes to achieve the desired climb rate. Don't attempt to climb at too steep an angle. Attempting to use too much brake to force a higher climb rate will only degrade the climb by creating extra induced drag and with the addition of lots of thrust could result in a stall or a spin.

Under power the Fusion behaves more like a powered fixed wing airplane than a paraglider, and it helps to think of it as such. Provided there are no obstacles in your path, it is often safer, and quite spectacular, to fly level with the ground after take-off gaining more speed before converting it into considerable height using the brakes and then easing off into the climb out.

The other reasons for not climbing out too steeply are the risks involved when having engine failure, i.e. a stall and diving recovery. Although the Fusion will not sit back behind you the way that some gliders may, a slow forward speed and high angle of attack is still likely to put you into a near stalled attitude if your power source suddenly goes on strike. In this situation you should always be able to set up a reasonable approach, so don't make things hard for yourself - fly with sufficient airspeed at all times, and keep your angle of attack under control at low altitudes.

Depending on the geometry of the set-up of your power unit, the propeller's torque effect may make itself felt as you leave the ground. Expect it to turn you and, if necessary, steer against it in order to maintain your direction. However, when countering the torque effect during a steep climb on slower trim settings under a lot of power, care must be taken to avoid the risk of stalling.

Because of the large vertical distance between the thrust line of the prop and the wing common to all Paramotors, the extent of the power management required is critically dependent on your set up and flying ability.

3.2.d - In Flight handling:-

The Fusion is an intermediate glider which has been designed to be fun and responsive. Despite its lively feel the Fusion is remarkably forgiving in all areas of its flight envelope it basically seems to encourage pilots to have fun whilst providing a relatively safe playground
It does have an exceptional roll rate; the controls are light and responsive (particularly on the slower trim settings). We have noted that when pilots used to other wings, fly it for the first time; they often find themselves overcorrecting for at least their first half hour of flight whilst getting used to it.
As with any thing new, we recommend that you get into it gently and don't rush, give it time, be smooth and concise with the controls and above all make sure when you start a turn finish it properly!

Power induced Oscillations.
Certain combinations of weight, power, and propeller size can cause oscillation where the torque and gyro effects lift the pilot to one side; you then drop back only to swing up again. This usually ocures when climbing as opposed to level flight - To counter this you can:-

- Make sure you complete your turn, so be smoother on the controls.

And/or

- Change the throttle setting and reduce the level of power.

And /or

- Adjust the torque strap if fitted.

And/or

- Shift your weight in the harness.

And/or

- Set up the wing tip steering (WTS) kit or other wing tip device to adjust out the torque effects

Weight shift is the best counter. Oscillation usually occurs on high power settings - more power and a larger propeller causes more oscillation. It could be that your control inputs are amplifying the oscillation. In this case, throttling back a little and flying hands-off, this should take care of the problem.
it is quite common even for inexperienced pilots to be too busy on the controls, this is referred to as **pilot induced oscillation**, and the simple answer is stop moving your hands

3.2.d Level Flight

On reaching a safe height after take off, and if you wish to go cruising, turn on to your chosen heading, reach up and release the trimmers if on a slow setting and if you like let go of the brakes completely. If conditions are very rough you may wish to keep hold of them, however the Fusion is even more stable at higher speeds, so we suggest you let go and enjoy the flight. If wing tip steering (WTS) is fitted, use to maintain level flight especially when thermals get under one side of the wing it really helps hold your course.
Note –All Paramotors should have adequate netting to prevent toggles entering propellers whilst in flight – check yours!

If you have one, keep an eye on your alti/vario. in level flight - it is easy to creep into a climb without noticing. Use the information from your instruments to optimize your forward speed and reduce drag and fuel consumption. This will all be specific to your own set up. With its hands-off flight capability, the Fusion is good at letting you do this.
With a sound understanding of the current wind conditions at different altitudes and intelligent use of any thermal activity, wave, convergence, ridge or frontal lift it is possible to conserve your fuel and greatly extend your operating range. The engine of course makes it easy to put you in the right place at the right time to exploit the conditions. Don't be afraid to throw the Fusion into a tight thermal to gain height and save fuel - you will find it is particularly good at coring thermals. Use of slower trim settings will allow you to climb faster in thermals.

3.2.e Using the Trimmers and Speed Bar

The Fusion's reflex wing section is unique, it basically has a huge range of trims and speed bar waiting for you to explore. We only ask that you explore the full flight envelop at a safe height and with adequate training and experience.

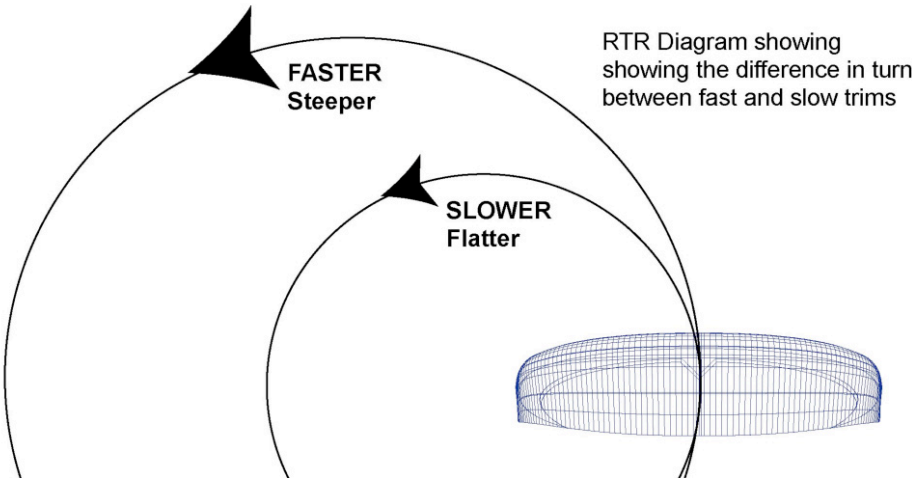
For correct trimmer usage, first study the FUSION R diagrams 01 & 02, showing trim and speed bar movement as well as speed bar hook-ups. The diagrams also show you the effect on the wing shape relative to the different settings, as well as the Center of Pressure changes (CP) showing differing levels of stability.
See FUSION R 2 for details (It is the same for all current sizes).

Remarkably, the Fusion has a huge and relatively safe speed range, 3.5 times greater than its stall speed as compared with most air-craft that only have between 1 -2.5 times.

With the trimmers fully off the wing's speed and stability increases and hence its ability to cut through turbulence and go places improves. On faster trim or speed bar settings, brake pressures generally increase and weight-shift or a wing tip steering (WTS) become more effective.

On the slower settings, sink rate improves dramatically and handling on the brakes becomes much lighter enabling you to make best use of thermal cores. Whilst giving you improved climb rate and shorter slower take-offs and landings. *See diagram RTR below describing differences in turning radii.*

At all speed settings the differential application of both brakes while banking allows you to make very effective turns by increasing the lift to assist the turn when the lift axis is canted over in the bank. Likewise engine thrust and speed bar can be applied at certain times to increase turn rate etc. These techniques come with pilot more experience allowing you to get the most from your wing achieving fully coordinated, smooth turns, much like those possible on a three axis aircraft.



RTR Diagram showing showing the difference in turn between fast and slow trims

Points to Note:-

- Remember, trims and speed bar are controls, so are extra items for your pre-flight checks!
- If the trim settings inadvertently become asymmetric, the wing just crabs. Likewise, if lift is dumped, by releasing the trimmers accidentally, the Fusion's reflex wing section keeps the wing above your head and you just lose some height while accelerating.
- In general, when flown with the higher the hang point motor units, the wing has more of a tendency to dive when entering turns, this may also result in higher 'G' loadings in tight turns and bigger swing through's when exiting maneuvers. Weight shift is usually less effective with high hang-points. However usually extra pendulum and lateral stability is gained.

3.3 Landing

There generally seems to be two philosophies about landing a paramotor - either with or without power.

3.3.a Power-off Landings

Cut all power at about 50m and glide in like a paraglider. This minimises the risk of propeller damage but you only get one go at it - you have to get it right!
With or without power the Fusion rides out turbulence better on a fast trim setting, so if it is rough come in fast (on neutral trim), allow yourself plenty of room to bleed off speed the speed just above the ground before touching down. The Fusion stores energy well and it may be necessary to round out and 'float' level with the ground, converting your excess speed into lift while you slow down, before flaring to touchdown.

If you aim at a restricted or tight landing area, in nil-wind conditions, it is advisable to use take off or even full trim (maximum lift configuration). This will hardly alter your glide angle but decreases your sink rate; and forward speed, these type of decisions become more critical at higher wing loadings.
Practice makes perfect!

3.3.b Power-on Landings

At a steady tick over, lose height at a shallow angle, then as you near the ground level out and bleed off speed before flaring to touch down. Kill the motor as your feet touch the ground. The advantage of this method of course is that at any time if you get it wrong you can power up and go round again. The disadvantages are the increased risk of (expensive) prop damage if you stuff it up, the dangers involved in falling over with the engine running and getting your lines in the propeller if you are late to switch off before the wing deflates.

Points to note:-

- If possible, know all about your landing area before you take off.
- Check the wind direction before you set up your approach.
- Power-off landings probably need less space.
- If in doubt, practise your approach until you are sure you can land safely.
- Practice and be ready for engine out or emergency landings, so practice spot landings regularly.

3.4 Advanced manoeuvres

The Fusion has achieved an EN rating for the manoeuvres prescribed by the test authorities. However it is essential that pilots take proper training before attempting certain aerobatics.
We also suggest that you seek advice from instructors or experienced pilots before conducting ANY of these manoeuvres or before going flying in extreme conditions, and that you carry a reserve parachute if this type of flying is for you.

Big ears.
This method is a good safe way of descending, However care should be taken when pulling down the outer A lines, not to pull them too far, the Fusion has a lot of load on the “A’s” especially on the faster trim settings. A spiral may be a more efficient way to get down. Note;- we do not recommend using big-ears with a lot of power, There is a risk of stable stall and it defeats the object.

B-Lining
The Fusion B-Lines well however we recommend that you undertake proper training as recovery characteristics change through out the trim range. A spiral is a much safer more efficient way to get down,
Or simply use the speed bar.

S.A.Ts and helicopters
The Fusion has proven very forgiving in these types of extreme manoeuvres; however they **most definitely** require approved and proper pilot training.

Adverse flight reactions

Cravats
Despite the intensive testing that has taken place. The Fusion is a modern wing, and in the name of performance it has an efficient line configuration. This means more gaps in between lines, so always a possibility of a cravat, this is when part of the canopy fabric makes its way between lines and jams, after recovery from a major deflation, either through severe turbulence or foolishly induced by the pilot. Normally pumping the brakes unravels the wing, if not then a sharp pull on the B's or D's usually does the job.

Stable stall
When any wing has many hours or has been over-loaded, one of the first signs of degradation is a tendency towards stable stalling. This may occur whilst exiting a high-energy or advanced manoeuvre.
When a power unit is added, it can even occur during a low airspeed take-off, usually when an over powerful engine relative to the pilot weight and wing loading is being flown. It is also most likely on the slow speed trims. Should you find yourself in this situation?
In flight
The quickest recovery is achieved by – coming off the power (if any) – give a short sharp pull on the brakes in unison, followed immediately by a firm but even pull on both A's at once. Or just the "A"s if too low.
During take-off
ALWAYS ensure that your wing is definitely flying with enough air speed, before opening the gas or pulling on any brakes during a launch. If it does happen that you have managed to leave the ground but are not fully flying, DO NOT add more power or more brakes but smoothly come off them, If the wing does not accelerate, just land. Re-assess the conditions as it may well be you are trying to climb out through a wind gradient.

Stalls and Spins
If a glider stalls or spins it is usually because its pilot has applied **too much brake** to both or one side. So is flying too slowly. A stall is when both sides of the wing have insufficient airspeed to continue flying so stall. A spin is when one side only is stalled. So the wing starts to rotate around its centre axis. (Too much power to weight ratio does not help these situations) –simply ease the bakes up smoothly and come off the power to exit and regain flight.
Warning: - Stalling or spinning is common to all aircraft that take off or fly with insufficient air speed. In addition the trust line on a paramotor is well below the wing, so adding power adds to the problem.
Sometimes Pilots panic and apply more power or more brake this is definitely wrong!
Be aware of the dangers and study your theory of flight.

All or the previously mentioned manoeuvres and recoveries from them, are taught on SIV courses. Contact a local instructor or paragliding club for more Information about SIV.

3.5 Paramania's GOLDEN RULES!

Wing + Motor + Pilot = Paramotoring, so 3 primary elements linked as one –
Over last few years we have seen amazing advances in our technology – wings and motors have come a long way – But what of the pilots and their training is it advancing also? –

Below is a list of sensible rules to help you keep safe - By Mike Campbell-Jones

- **Always fly with 3 or more options at all times, if you find yourself with less, search for more right away. You are at RISK! (this rule applies to the entire activity)**
- **If you spot a problem, no matter how small, deal with it NOW!**
- **Never rush anything, take you time, stay cool (after all you are a pilot now)**
- **Understand the theory of flight – take the time to do this.**
- **75% of Paramotor accidents happen around propellers on the ground. Have respect, clear people away. Shout "CLEAR PROP" to remind yourself also, before you start your engine, why not, embarrassed or what?**

- **Don't be too shy or too proud to ask advice.**
- **Understand the weather, (including micro-met)**
- **Always carry out full pre-flight checks before launching.**
- **Check, check and re-check the fuel system for leaks.**
- **Make sure you have enough fuel to get you there? Better too much than too little!**
- **Check for any loose articles that could trail or fall into the propeller while flying and fasten them securely.**
- **Never place your engine downwind of your wing.**
- **Always put on and fasten your helmet before clipping in to the harness.**
- **Never rely on the engine: it may cut out at any moment. Always fly as if it will, so fly the wing – NOT the motor**
- **Scan the sky all times; know where the others are all of the time!**
- **Don't fly into danger - over water, trees, rough terrain. Where an engine failure will leave you in trouble (water in particular).**
- **If you see pylons or poles, between there will be power lines. Know where they are especially when low. They are our biggest killer!**
- **Avoid downwind low flying: it drastically reduces your options!**
- **Try not to fly into the turbulence of your own wake or that of others, especially at low altitude.**
- **It is unwise to fly hands-off below about 100m. AGL. Especially as an engine failure will require you to make immediate control inputs to set up a landing approach.**
- **Be sensitive to mechanical problems early. A noticeable change in engine tone or a new vibration may spell trouble. Land and check it out.**
- **Make sure your navigation and awareness of air law is up to the job. study your local air charts.**
- **Remember, not everyone enjoys your engine noise.**
- **Care must be taken when flying near livestock, (especially horses and pig farms) and sensitive areas**
- **Big respect to landowners and farmers, look after them, we need them!**

4 CARE AND MAINTENANCE of your wing

The safety and life-span of any aircraft, however well designed, built and flown, depends in the end upon how well it is cared for. Confidence in your equipment and the quality of its maintenance is essential to good flying. Even a product as well engineered and carefully constructed as the Fusion can quickly deteriorate if neglected or abused. The better you look after your wing, the better it will look after you.

4.1 Basic Care

As with any paraglider, the basic rules for looking after your Paramania wing are:-

- **Keep it Cool:** Prolonged exposure to excessive heat in places like the car, the loft or the airing cupboard as well as contact with hot engine parts can damage and significantly shorten the life of both cloth and lines.
- **Keep it Dry:** Packing or storing a wet wing may make it moldy, damage the coating of the fabric, corrode the metal fittings and in extreme cases rot both the cloth and the lines.
  Salt water is particularly harmful (as salt crystals form an abrasive coating).
  You should avoid immersing your wing in salt water if at all possible. If it does happen, rinse it thoroughly in fresh water and dry it out completely, preferably in the shade, before packing it away.
- **Keep it dark:** U V light degrades coatings and drastically weakens fabrics.
  Never leave your wing laid out for long periods beneath holes in the ozone layer. Fold or pack it away when it's not in the air.
- **Keep it clean:** Some dirt can be highly corrosive. Clean off any such contamination as soon as possible using clean, fresh water. Don't use detergents: they can cause as much damage as the

stains, if not more. Only use neutral soft soaps (PH7) In particular, store and transport your wing away from the motor (never in the same bag) to avoid any contact with oil or petrol.

- **Keep it Clear:** Sharp, hard or abrasive items such as helmets, flight instruments, harness buckles and the like can accelerate fabric wear and even hole the wing. The drawstring stuff-bag provided with your canopy affords a measure of protection but you should still try to ensure that you store and transport it clear of contact with anything likely to damage it.
- **Keep it Lonely:** Insects, such as grass-hoppers and ants will simply eat their way out if rolled up with the wing. Grazing cattle can literally lick the coatings off the fabric and mice love to make homes in it! (We suggest hanging up your wing in its bag during long term storage)

Above all, never forget, that for all its compact portability, your powerglider is an aeroplane and deserves to be treated as such!

4.2 Periodic Maintenance

Although your Fusion powerglider, is designed and engineered to give you at least 400 hrs of air time, regular maintenance is essential to pinpoint any problems that may arise as a result of routine wear and tear and is especially important after any incident which may have resulted in fabric or line damage that may not show up in the course of pre-flight checks. Paramania or its **accredited agents** will, for a small charge, carry out a specified programme of maintenance checks designed to keep your wing in tip-top shape and certify its condition in a written report that will become a valuable part of its service history.
Paramania takes great pride in the quality of both its product and the service that supports it. Feedback from periodic maintenance checks performs a vital role in its quality assurance procedures. They are therefore just as important to us as they are to you and you can be confident that all such checks carried out by the manufacturer are comprehensive and thorough.
We recommend that these inspections are carried out annually or after every 100 flying hours, whichever is the sooner. They are, of course, an essential addition to rather than a substitute for the canopy and line inspections that form part of your own pre-flight checks.

4.3 Repairs

A repair kit is provided with your Fusion powerglider that allows you to carry out small-scale emergency repairs. It consists of about 1 metre of each nylon fabric used in its construction, in self adhesive rip-stop tape and 4 spare suspension lines, looped at both ends and of the same length and thickness as your primary lines. These may also be used to replace primary brake lines

Damage beyond the scope of this kit to deal with and more major repairs that may be necessary to loaded parts of the wing's structure, such as seams, line attachments, ribs, risers, leading and trailing edges etc. should on **NO** account be carried out by anyone other than a **Paramania accredited agent**.
Paramania can accept no responsibility for repairs, however minor, carried out by anyone other than a **Paramania accredited agent,** neither for any damage to the wing resulting from accident, neglect, negligence or abuse.
In all such cases any statutory rights and obligations of guarantee are automatically cancelled.

4.4 Care and Maintenance of your Power Unit

This manual refers only to your Fusion powerglider and any issues to do with the Power Pack you are using is beyond its remit. Refer to the relevant literature for details of care, maintenance, servicing and repair concerning your motor and harness. However we can offer advice if requested.

4.5 Care and maintenance of the pilot

A pilot has a huge responsibility – and a pilot is also the most important part of a Paramotor aircraft!
It's a fact that most accidents happen purely through pilot error and are usually a result of several different error factors coming together. It seems we should check our self's at all times!
Are you in good health? Are you tired? Have you enough blood sugar/energy?
Are you showing off to family, friends or camera? Is your knowledge up to scratch?
Are the conditions appropriate for your pilot level? Are you current enough?

Are you being over confident? Are you choosing to fly in dangerous areas?
Are you alert enough? Are you well equipped? Have you taken adequate training?
Etc… the list goes on….. Do you ask yourself these things?

Another interesting fact, is that most pilots choose to fly outside the cone of safety – for instance
We are relatively safe at 2-3m above the ground and after that above 300m (the min height to throw an emergency parachute or allow time to simply find a landing) sandwiched in between these altitudes is our most dangerous height – as a Paramotorist, how high do you and your friends fly most of the time?
This is not a manual for a pilot - but we hope it has some useful common sense in it!

5 Technical diagrams

Paramania Standard Risers - for Fusion wing
Diagram - showing trim in position @ neutral - Reference FUS-R-1-10-08

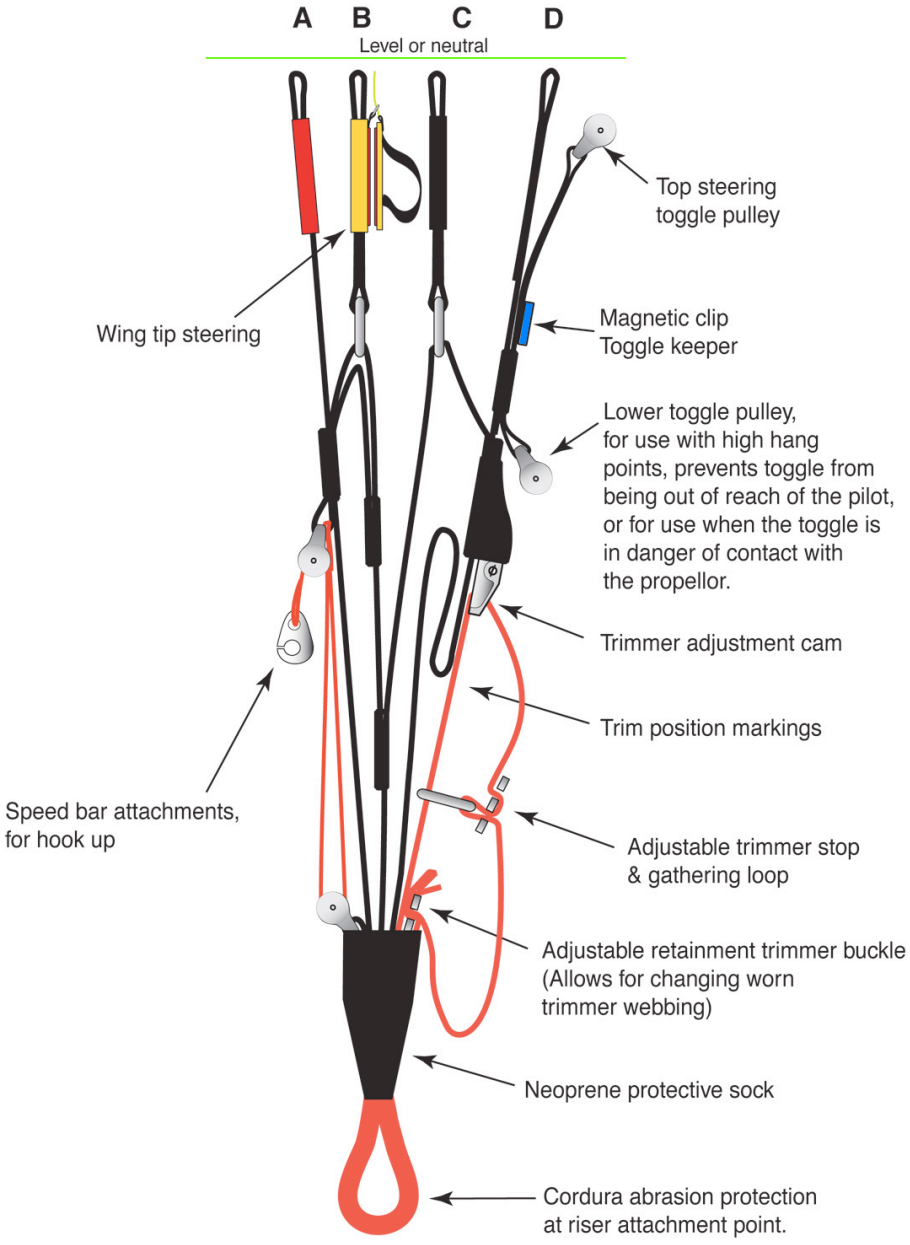
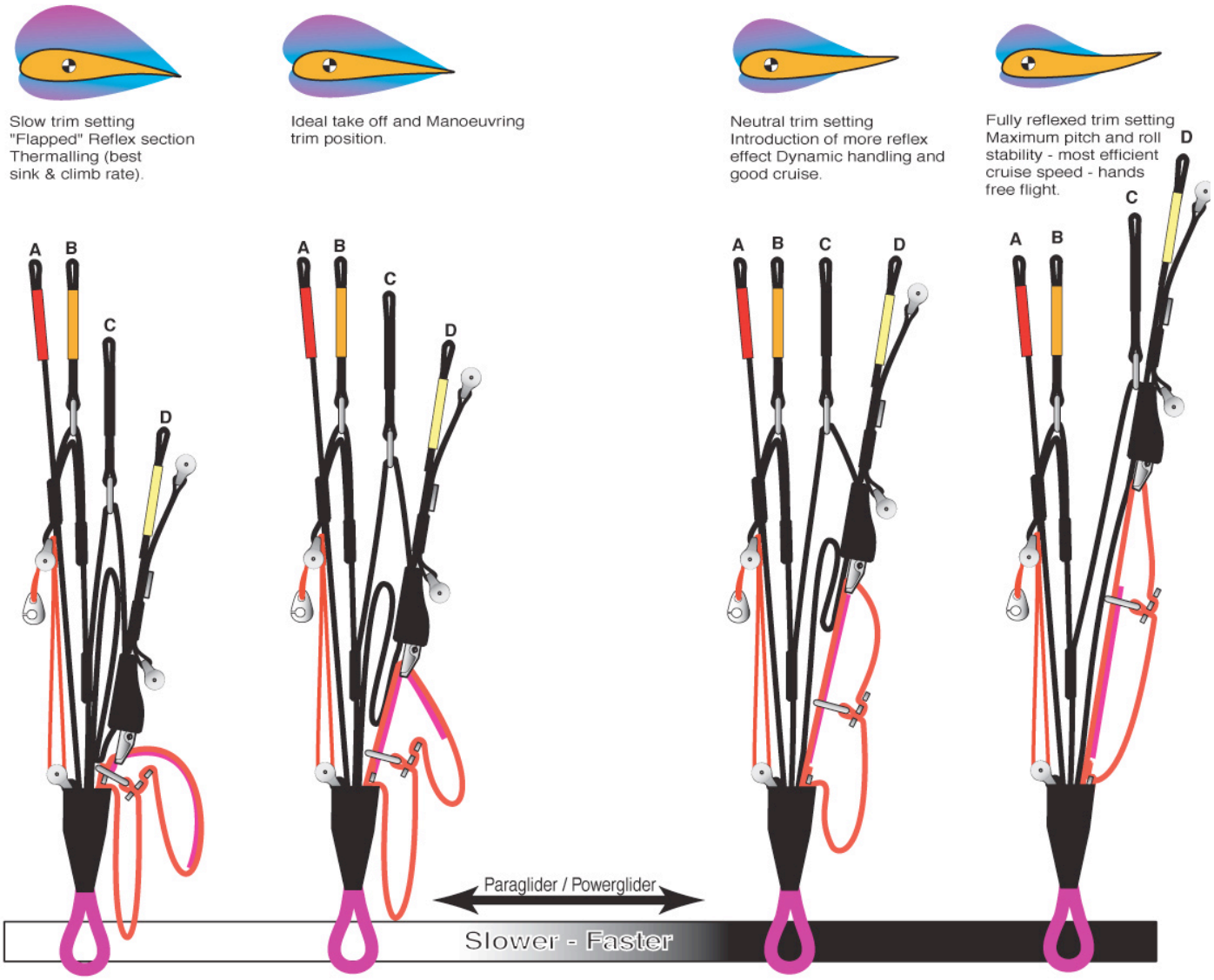


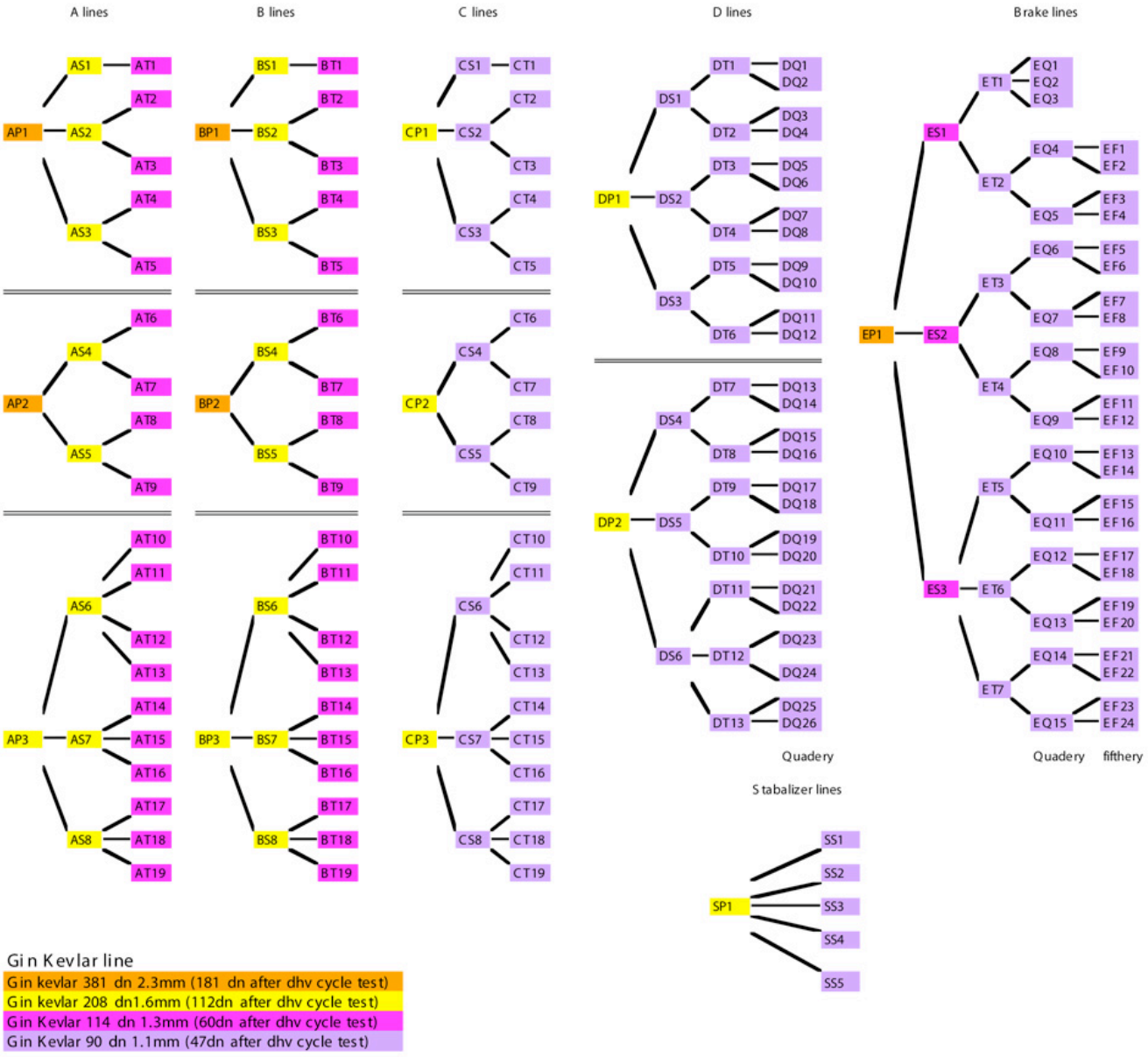
Diagram FUS-R-2 10-08 showing different trim positions and their effect on the wing section



5.2 Lining Tables

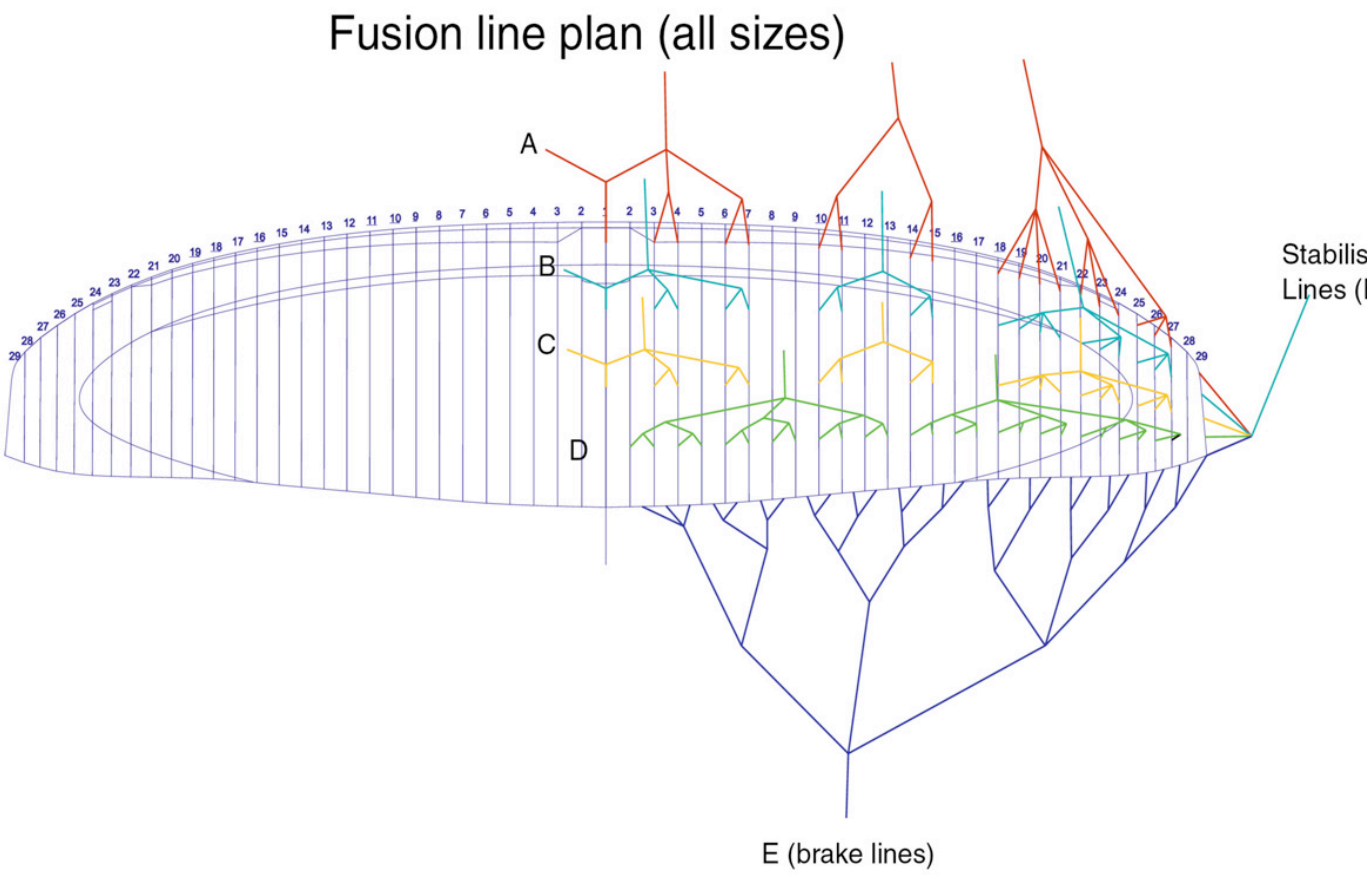
Below are lining diagrams & tables. The lines are configured so that most profile changes take place in the tertiary lines, meaning that they are all different lengths. This enables the secondary and primary lines to be more standard in lengths. These are the lines most often damaged or in need of changing, particularly when a full service is carried out. Lines are numbered from the centre towards the tip. A number of spare primary lines come with your repair kit, just in case you catch one in a propeller. These are the strongest lines and may be temporarily used to replace a thinner primary (like a C or D primary) or even a brake line!

Fusion - line plan ALL MCJ - 16-12-08



Gin Kevlar line

Gin kevlar 381 dn 2.3mm (181 dn after dhv cycle test)
Gin kevlar 208 dn1.6mm (112dn after dhv cycle test)
Gin Kevlar 114 dn 1.3mm (60dn after dhv cycle test)
Gin Kevlar 90 dn 1.1mm (47dn after dhv cycle test)


Fusion line plan (all sizes)
A
B
C
D
Stabilis
Lines (
E (brake lines)

5.3 Technical data for the Fusion

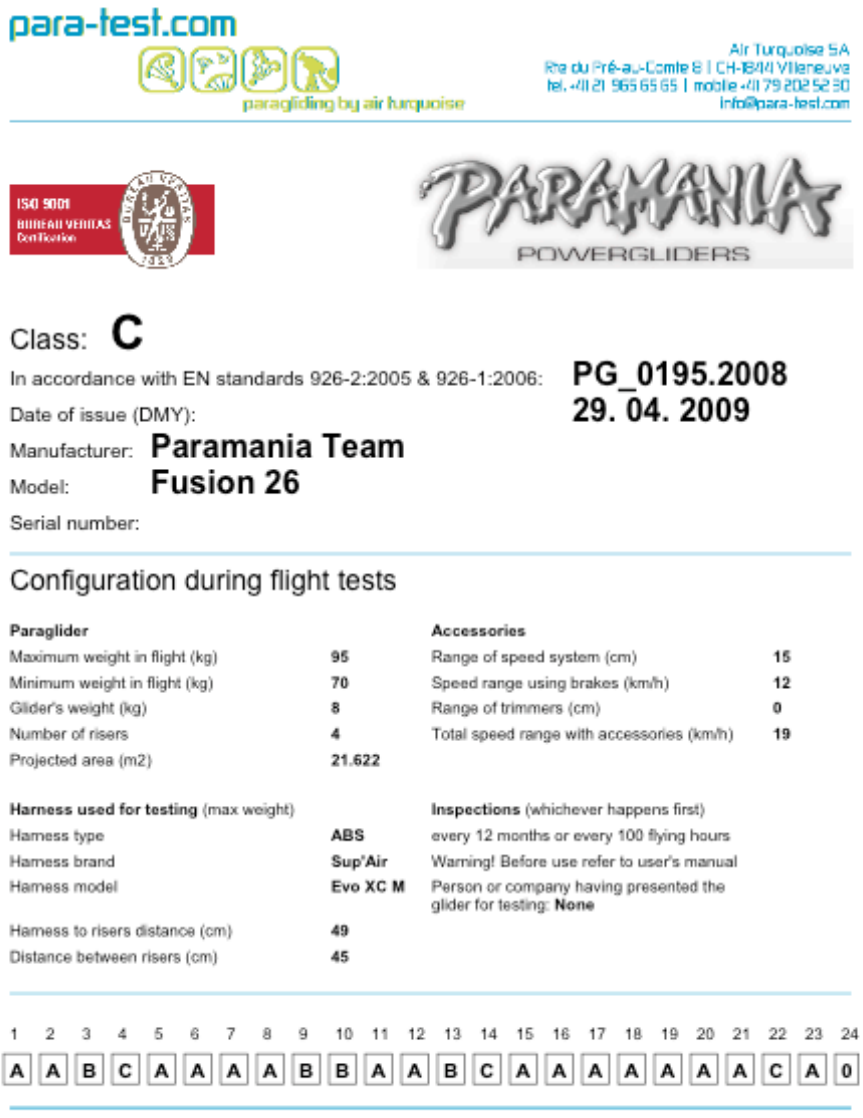
Fusion technical details

Prep by MC-J 19-03-09

	XS	S	M	L
	20m (comp)	23m	26m	29m
Flat area	20	23	26	29
Flat wing span	10.657	11.429	12.15	12.832
Flat aspect ratio	5.679	5.678	5.678	5.678
Projected area	16.632	19.127	21.622	24.117
Projected span	8.244	8.841	9.373	9.926
Projected aspect area	4.086	4.083	4.083	4.083
Leading edge length	11.055	11.855	12.604	13.311
Trailing edge length	10.741	11.518	12.245	12.933
Number of cells	56	56	56	56
Center chord length	231.2	2.479	2.636	2.784
Tip chord	0.643	0.69	0.733	0.774
Wing distance above pilot	6.394	6.857	7.29	7.699
Riser length	470	470	470	470
Test harness width	440	440	440	440
load tested EN	8G+	8G+	8G+	8G+
Weight of glider Kg	6	7.25	8	8.75
Rec weight range (without motor)	50-80	60-85	70-95	80-105
Rec weight range paramotor	50-110	60-120	70-140	80-160
speed bar range (Cm)	16	16	16	16
trimmer range (Cm)	22	22	22	22
Glide angle	9+	9+	9+	9+
Sink rate	1.1	1.1	1.1	1.1
Min speed	-25	-25	-25	-25
Trim speed	35	35	35	35
Cruise speed (detrimed)	47	47	47	47
Max speed accelerated	60+	60+	60+	60+

5.4 EN certification label

When the Fusion was tested under the EN system, with the heaviest pilot weight possible, to help simulate Paramotor weights it was awarded a “C” rating. *See below for the test flight data*



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ISO 9001 BUREAU VERITAS Certification

PARAMANIA POWERGLIDERS

Class: **C**

In accordance with EN standards 926-2:2005 & 926-1:2006: **PG_0195.2008**

Date of issue (DMY): **29. 04. 2009**

Manufacturer: **Paramania Team**

Model: **Fusion 26**

Serial number:

Configuration during flight tests

Paraglider		**Accessories**	
Maximum weight in flight (kg)	**95**	Range of speed system (cm)	**15**
Minimum weight in flight (kg)	**70**	Speed range using brakes (km/h)	**12**
Glider's weight (kg)	**8**	Range of trimmers (cm)	**0**
Number of risers	**4**	Total speed range with accessories (km/h)	**19**
Projected area (m2)	**21.622**		

Harness used for testing (max weight)		**Inspections** (whichever happens first)
Harness type	**ABS**	every 12 months or every 100 flying hours
Harness brand	**Sup'Air**	Warning! Before use refer to user's manual
Harness model	**Evo XC M**	Person or company having presented the glider for testing: **None**
Harness to risers distance (cm)	**49**	
Distance between risers (cm)	**45**	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A	A	B	C	A	A	A	A	B	B	A	A	B	C	A	A	A	A	A	A	A	C	A	0

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ISO 9001 BUREAU VERITAS Certification

PARAMANIA POWERGLIDERS

Class: **C**

In accordance with EN standards 926-2:2005 & 926-1:2006: **PG_0196.2008**

Date of issue (DMY): **29. 04. 2009**

Manufacturer: **Paramania Team**

Model: **Fusion 29**

Serial number:

Configuration during flight tests

Paraglider		**Accessories**	
Maximum weight in flight (kg)	**105**	Range of speed system (cm)	**15**
Minimum weight in flight (kg)	**80**	Speed range using brakes (km/h)	**12**
Glider's weight (kg)	**8.75**	Range of trimmers (cm)	**0**
Number of risers	**4**	Total speed range with accessories (km/h)	**19**
Projected area (m2)	**24.117**		

Harness used for testing (max weight)		**Inspections** (whichever happens first)
Harness type	**ABS**	every 12 months or every 100 flying hours
Harness brand	**Sup'Air**	Warning! Before use refer to user's manual
Harness model	**Altiplume L**	Person or company having presented the glider for testing: **None**
Harness to risers distance (cm)	**45**	
Distance between risers (cm)	**48**	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A	A	A	C	A	A	A	A	B	A	A	A	A	C	A	A	A	A	A	B	B	A	A	0

6 SUMMARY

We would like to stress again the points made in Section 1 of this Manual.
The Fusion Powerglider Manual is subject to continuous updating.
To assist us in our quest for perfection, we would appreciate any input that you the customer may contribute towards future versions.
Please don't hesitate to contact us to let us know your views.

The team wish you many hours of fun, underneath your *Fusion Powerglider*.

Paramania Team

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