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# MAGIC MOTOR Owner's Manual

## POWERED PARAGLIDER EN / LTF A + DGAC

### Welcome to Bruce Goldsmith Design

BGD is a world leader in the design and production of paragliders. For many years Bruce Goldsmith and his team have been developing products with world-beating performance for pilots who want the best. We apply our competitive knowledge to design top quality products that combine the highest performance with the safe handling our customers value and respect. BGD pilots appreciate our quality and reliability. BGD's world-class status is based on the skills and expertise we have developed in combining aerodynamic design with cloth and materials technology. All BGD products are developed and made with the same skill and attention to good design that are synonymous with the ultimate performance and precision required by paragliders.

### Congratulations on your purchase of the BGD MAGIC MOTOR

The MAGIC MOTOR is a safe and fun wing, suitable for beginners and perfectly adapted for paramotoring. It is designed to a high standard of safety and stability, but it will only retain these characteristics if it is properly looked after.

This manual has been prepared to give you information and advice about your paraglider. If you ever need any replacement parts or further information, please do not hesitate to contact your nearest BGD dealer or contact BGD directly. Please read this manual carefully from the first to the last chapter to ensure you get the best out of your wing.

## 2. Introduction

The MAGIC MOTOR is a powered paraglider suitable for novice pilots. It is easy to launch and very stable in flight, well suited for pilots under instruction and for their continued progression after school. It is certified for both free-flight and paramotor use with two riser sets available – one for free-flight and one for powered flight.

Ensure that you have the correct riser set installed for your intended purpose, free-flight or PPG.

The use of this glider is limited to non-aerobatic manoeuvres.

This paraglider must not:

1. Be flown outside the certified weight range
2. Have its trim speed adjusted by changing the length of risers or lines
3. Be flown in rain or snow
4. Be towed with a tow-line tension in excess of 200kg

### Test Flight

It is your dealer's responsibility to test fly your paraglider before you receive it. The test flight record of this can be found towards the end of this manual. Please be sure that this has been completed by your dealer. Failure to test fly a new paraglider may invalidate any warranty.

## Brake Line Adjustments for PPG

When using the PPG risers, the brake line lengths should be adjusted to suit the hangpoints (high, low or trike).

## Modifications

When using the PPG riser-set, only the brake line lengths should be adjusted. No other changes or modifications should be performed without first consulting your BGD dealer, as they may invalidate the warranty or certification.

## Warranty

In order to enjoy full benefits of the BGD warranty, you must complete the warranty form on the website. For further information about the BGD warranty, please refer to the corresponding page on our website.

## 3. Preparation

1. Select a suitable take-off area determined by wind and terrain, clear of any obstacles that may catch in the lines or damage the canopy.
2. Unroll the canopy with the bottom surface facing upwards, the openings at the downwind end of the take-off area, and the harness at the trailing edge at the upwind side.
3. Unroll the canopy to each side so that the leading edge openings form a semicircular shape, with the trailing edge drawn together at the centre of the arc. The harness should be drawn away from the canopy until the suspension lines are just tight.
4. Prepare and check your paramotor according to the manufacturer's instructions.
5. Connect the wing to the paramotor (or to the tandem spreaders), making sure there are no twists in the risers, and that the maillons or karabiners are correctly closed.

## 4. Pre-flight Inspection

Your paraglider is designed to be as simple as possible to inspect and maintain but a thorough pre-flight procedure is mandatory on all aircraft. The following pre-flight inspection procedure should be carried out before each flight.

1. Whilst opening out the paraglider check the outside of the canopy for any tears where it may have been caught on a sharp object or even have been damaged whilst in its bag.
2. Check that the lines are not twisted or knotted. Divide the suspension lines into six groups, each group coming from one riser. By starting from the harness and running towards the canopy remove any tangles or twists in the lines. Partially inflating the canopy in the wind will help to sort out the lines.
3. It is particularly important that the brakes are clear and free to move. Check the knot which attaches the brake handles to the brake lines. Both brakes should be the same length and this can be checked by asking an assistant to hold the upper end of the brake lines together whilst the pilot holds the brake handles. The brake lines should be just slack with the wing inflated when the brakes are not applied. After checking the brake lines lay them on the ground.
4. Always check the riser maillons and the attachment points to the paramotor frame or buggy. It is strongly recommended to use a safety strap.
5. Before getting into the harness you should be wearing a good crash helmet. Put on the harness ensuring all the buckles are secure and properly adjusted for comfort.
6. Check that the trimmers are closed and maillons at the same height – the position recommended for take-off.

**WARNING**

Take care to protect yourself and other people from the propeller. Always start your motor up at a safe distance from other people. If it touches the ground it can fire objects into the air which could injure people several metres away.

Remember there are inherent risks with petrol, oil and volatile or flammable materials.



## 5. Flight Characteristics

This manual is not intended as an instruction book. You should be a qualified pilot or under suitable supervision, but the following comments describe how to get the best from your paraglider.

### Weight range

Each size of paraglider certified for a certain weight range. The weight refers to the 'overall take-off weight'.

The 'In-flight weight range for free-flight' is the weight of the pilot, paraglider, harness and other equipment carried when free-flying. The paraglider is EN/LTF certified for this weight range.

The 'extended weight range for PPG' allows for all of the above, plus the paramotor and a full tank of fuel. It is the weight range approved by DGAC for flying under power.

We recommend to fly in the middle of the weight range.

If you fly in the lower half of the weight range, the turning agility decreases and the glider will be more damped. In strong turbulence the wing will have a slightly increased tendency to deform and to collapse than with a higher wing loading. Only fly lightly loaded if you fly in aerologically stable conditions, such as in the morning or evening.

If you fly in the upper half of the weight range, agility and stability in turbulence will increase, and speed will increase slightly. The self-damping will decrease in turns, as well as after collapses.

### Take-off

Your wing is easy to inflate in light or stronger winds and will quickly rise overhead to the flying position. The best

inflation technique is to hold one A-riser in each hand. The easiest take-off is usually obtained with the trimmers fully closed, maillons level. We recommend the trimmers are partially released for launching in strong-wind (more than 10km/h) conditions.

Never try to launch if the wing is not fully inflated and above your head, and if you do not have full control of pitch and / or roll.

## **Initial climb**

Once in the air, you should continue to face into the wind while you gain altitude. Leave the trimmers in the take-off (closed) position to attain the best climb rate. Do not attempt to increase your climb rate by braking, as using the brakes combined with the engine's thrust can increase the angle of attack to the point where the wing can stall. In addition, this high angle of attack can result in a big dive if the motor suddenly dies, which could be dangerous if you are near the ground.

Do not initiate a turn until you have sufficient height and speed to do so. In certain circumstances, a pilot can induce unintended oscillations. This can be due to a combination of the engine/propeller and pilot's weightshift and / or action on the brakes. To stop these oscillations you should reduce the power, ensure that you are seated centrally and not accidentally applying weightshift, and that you are not acting on the brakes. Once the oscillations have stabilised you can gently reapply power.

## **Straight flight and trimmers**

After take-off, once you have gained a safe altitude, if you want to increase your speed you can open up the trimmers completely, keeping your hands up.

To reduce fuel consumption or to fly in thermals, the trimmers should be closed, pulled down to their maximum. It is important to regularly check the wear on the trimmers and that the system is functioning cleanly with no sticking

points. If they are showing signs of wear, the trimmers should be replaced by the pilot.

You should never fly a paramotor in strong turbulence or violent winds.

## Turning

The first turns should be gradual and progressive. The first action to change direction should be the movement of your weight in the harness towards the side of the intended turn. Then gently relax the pressure on the outer brake, and gently apply pressure to the inner brake until you attain the desired bank angle. To adjust your speed and turning-circle size, coordinate your weightshift with pressure on the outer brake.

Remember that to violently apply pressure on the brakes is dangerous and should be avoided. Never initiate a turn if you are flying slowly, as you risk the glider entering a spin.

## Landing

Set the trimmers to the closed position (maillons aligned) and set up your approach downwind of the landing field. When your height above the field is around 40m, slow the motor down and glide in the direction of your intended landing point. If you are sure to be able to reach your landing place, you should switch the engine off\*. If not, power up, gain some height and make your approach again.

When you are on your final approach with your engine off, maintain your speed (hands up) to keep plenty of energy in the wing until you are about 1-2 metres above the ground. Flare, braking slowly and gradually to slow down the wing until you are close to the stall-point and able to land on your feet.

\*If you land with the engine running there is a considerable risk of rotational propeller damage, (lines passing through the propeller, or even injury)

## Active Piloting

'Active piloting' is a tool that will help you fly with greater safety and enjoyment. It means flying in empathy with your paraglider, not only guiding it through the air but also being aware of feedback from the wing, especially in thermals and turbulence. If the air is smooth the feedback can be minimal but in turbulence feedback is continuous and needs to be constantly assessed by the pilot. Such reactions become instinctive in good pilots.

## Rapid Descent Techniques

### Big Ears

The 'baby A-riser' allows the wing tips of the paraglider to be folded in simply and easily to increase its sink rate. This big ear facility does not mean you should fly in stronger winds, but allows you to descend quickly without substantially reducing the forward speed of the canopy (B-lining substantially reduces the canopy's forward speed). To engage big ears, lean forward in the harness and grasp the baby A-risers (one in each hand) at the maillons, keeping hold of both brake handles if possible. Pull the risers out and down at least 30cm so as to collapse the tips of the glider. It is very important that the other A-lines are not affected when you do this, as this could cause the leading edge to collapse. Steering is possible by weightshifting with big ears in. If the big ears do not come out quickly on their own, a gentle pump on the brakes will speed things up.

Before using the big ears facility in earnest it is essential to practise beforehand with plenty of ground clearance in case a leading edge collapse occurs. Always keep hold of both brakes in order to retain control. Putting your hands through the brake handles so they remain on your wrists is a good method of doing this.

### B-Line Stall

This fast descent method is a useful emergency procedure. With both hands through the brake handles, take hold of the top of the B-risers, one in each hand, and pull them down by around 50 cm. This will stall the canopy and forward speed will drop to zero. Make sure you have plenty of ground clearance because the descent rate can be over 10 m/sec. To increase the descent rate pull harder on the B-risers. When you release the B-risers the canopy will

automatically start flying again, normally within two seconds. Sometimes the canopy will turn gently when it exits from the B-line stall. It is normally better to release the B-risers fairly quickly rather than slowly, as doing so slowly may result in the canopy entering deep stall. Always release the risers symmetrically, as an asymmetric release from a B-line stall may result in the glider entering a spin.

This manoeuvre is useful if you need to lose a lot of height quickly, perhaps when escaping from a thunderstorm. It should not be performed with less than 100m of ground clearance.

## Spiral Dive

A normal turn can be converted into a strong spiral dive by continuing to apply one brake. The bank angle and speed of the turn will increase as the downward spiral is continued. Be careful to enter the spiral gradually as too quick a brake application can cause a spin or an over-the-nose spiral.

BGD gliders are designed and tested to recover from normal spirals with a descent rate inferior to 16 m/s, automatically without pilot input. If the pilot increases the descent rate of the spiral to over 16 m/s or initiates what is known as an over-the-nose spiral, the glider may require pilot input to recover. In this case all the pilot needs to do is to apply some outside brake and steer the glider out of the turn.

The over-the-nose spiral is a special type of spiral dive where the glider points almost directly at the ground. It will enter this if you make a sudden brake application during the spiral entry so that the glider yaws around. The nose of the glider ends up pointing at the ground, after which it picks up speed very quickly. This technique is very similar to SAT entry technique, and like the SAT it is an aerobatic manoeuvre, which is outside the normal safe flight envelope. Please do not practise these manoeuvres as they can be dangerous. Care should be taken when exiting from any spiral dive. To pull out of a steep spiral dive, release the applied brake gradually or apply opposite brake gradually. A sharp release of the brake can cause the glider to surge and dive as the wing converts speed to lift. Always be ready to damp out any potential dive with the brakes. Also be ready to encounter turbulence when you exit from a spiral because you may fly through your own wake turbulence, which can cause a collapse.

CAUTION: Spiral dives can cause loss of orientation (black-out) and some time is needed to exit this manoeuvre. This manoeuvre must be exited in time and with sufficient height.

## Accelerator (speed stirrup) and trimmers

The PPG risers have trimmers and an accelerator system, which can be used to increase the speed. The standard trimmer setting is fully closed (maillons level), which is the slowest position.

We recommend you fly in conditions where you can penetrate into wind without having to use the accelerator or fully opening the trimmers, which gives you a safety margin of extra speed should you need it.

Glide deteriorates slightly and the glider is slightly more susceptible to collapses with trimmers open or the speed bar applied. Using the speed system can affect the pilot's balance in the harness and it may be necessary to make some adjustments to the harness.

To fly at maximum speed the trimmers should be released and the speed bar pushed progressively until the pullies touch. Do not go beyond this point by using excessive force to attempt to make the glider go faster as this may result in the glider collapsing.

**IMPORTANT: We do not recommend pilots to fly with full accelerator and trimmers fully open at the same time**

Check the speed system and trimmer components regularly for wear and tear, and ensure they always work smoothly.

EN certification is only valid with the PPG risers when flown within the 'In-flight weight range for free flight', and with the trimmers set to their fully closed (slow) position.

The paraglider is DGAC certified for the 'extended weight range for PPG' with the trimmers in any position.

## 6. Recovery Techniques

### Stalls

Stalls are dangerous and should not be practised in the course of normal flying. Stalls are caused through flying too slowly. Airspeed is lost as brake pressure increases and as the canopy approaches the stall point it will start to descend vertically and finally begin to collapse. Should this occur it is important that the pilot releases the brakes at the correct moment. The brakes should never be released when the wing has fallen behind the pilot; the brakes should be released fairly slowly, to prevent the forward dive of the canopy from being too strong. A pre-release of the brake and the reconstruction of the full span is recommended to avoid the tips getting cravatted during the recovery. Pilots are advised never to attempt this manoeuvre unless under SIV instruction. This manual is not intended to give instruction in this or any other area.

#### Deep Stall (or Parachutal Stall)

Your paraglider has been designed so that it will not easily remain in a deep stall. However, if it is incorrectly rigged or its flying characteristics have been adversely affected by some other cause, it is possible that it could enter this situation. In the interests of safety all pilots should be aware of this problem, and know how to recover from it. The most common way to enter deep stall is from a flying too slowly, from a B-line stall or even from big ears.

When in deep stall the pilot will notice the following:

1. Very low airspeed.
2. Almost-vertical descent (like a round canopy), typically around 5m/s.
3. The paraglider appears quite well inflated but does not have full internal pressure. It looks and feels a bit limp.

Recovery from deep stall is quite simple: the normal method is to simply initiate a mild turn. As the canopy starts to turn it will automatically change to normal flight, but it is very important not to turn too fast as this could induce a spin. The second method is to pull gently on the A-risers. This helps the airflow to re-attach to the leading edge, but be careful not to pull down too hard as this will induce a front collapse.

If the deep stall is particularly stubborn and the previous methods do not work then a full stall will solve the problem. To do this apply both brakes again fairly quickly, as if to do a strong stall, then immediately release both brakes and damp out the forward surge in the normal way. The canopy will swing behind you then automatically reinflate and surge forward in front of you before returning to normal flight. It is the surge forward that exits the canopy from deep stall.

## Spins

Spins are dangerous and should not be practised in the course of normal flying. Spins occur when the pilot tries to turn too fast. In a spin the pilot, lines and canopy basically stay vertical and rotate around a vertical axis. Your paraglider will resist spinning, but if a spin is inadvertently induced the pilot should release the brake pressure but always be ready to damp out any dive as the glider exits the spin. If the pilot does not damp the dive on exiting the spin the glider may have an asymmetric deflation.

## Symmetric Front Collapse

It is possible that turbulence can cause the front of the wing to symmetrically collapse, though active piloting can largely prevent this from occurring accidentally. A pilot can reproduce the effect by taking hold of both the A-risers and pulling down sharply on them. The wing will automatically recover on its own from this situation in around 3 seconds. During this recovery period it is advisable not to apply the brakes as this could stall the wing.

## Asymmetric Front Collapse

Your paraglider is very resistant to deflations; however if the canopy collapses on one side due to turbulence, the



pilot should first of all control the direction of flight by countering on the opposite brake. Most normal collapses will immediately reinflate on their own and you will hardly have time to react before the wing reinflates automatically. The act of controlling the direction will tend to reinflate the wing. However, with more persistent collapses it may be necessary to pump the brake on the collapsed wing using a long, strong, smooth and firm action. Normally one or two pumps of around 80 cm will be sufficient. Each pump should be applied in about one second and smoothly released. In severe cases it can be more effective to pump both brakes together to get the canopy to reinflate. Be careful not to stall the wing completely if this technique is used.

## Releasing a trapped tip (cravat)

It should be difficult to trap the tip so that it will not come out quickly. However, following a very severe deflation any canopy could become tied up in its own lines. If this occurs then first of all use the standard method of recovery from a tip deflation as described in Asymmetric Front Collapse above. If the canopy still does not recover then pull the rear risers to help the canopy to reinflate. Pulling the stabilo line is also a good way to remove cravats, but remember to control your flight direction as your number-one priority. If you are very low then it is much more important to steer the canopy into a safe landing place or even throw your reserve.

NOTE: Test pilots have tested your paraglider well beyond the normal flight envelope, but such tests are carried out in a very precise manner by trained test pilots with a back-up parachute, and over water. Stalls and spins on any paragliders are dangerous manoeuvres and are not recommended.

## Loss of brakes

In the unlikely event of a brake line snapping in flight, or a handle becoming detached, the glider can be flown by gently pulling the rear risers for directional control.

## 7. Storage and Servicing

### Storage & Care

If you have to pack your canopy away wet, do not leave it for more than a few hours in that condition. As soon as possible dry it out or it can become affected by mould. Do not use direct heat sources to dry the canopy as it is inflammable. Using a dehumidifier is strongly recommended if several damp gliders are stored together frequently.

Always store the canopy in a dry, warm place. Ideally this should be in the temperature range of 5 to 25 degrees centigrade.

Never let your canopy freeze, particularly if it is damp.

The canopy is made from high quality nylon, which is treated against weakening from ultra violet radiation. However it is always wise to minimise the exposure to UV radiation as this weakens the fabric of the canopy, and long exposure to harsh sunlight can severely compromise the safety of your canopy. Once you have finished flying, put your canopy away. Do not leave it laying in strong sunshine unnecessarily. If you are concerned about any aspect of the integrity of your paraglider please contact your nearest BGD dealer or talk to BGD directly.

Never drag or slide the top surface of the glider over concrete or other hard surface as this can cause abrasion damage to the sail.

Do not treat your canopy with chemical cleaners or solvents. If you must wash the fabric, use warm water and a little soap. If your canopy gets wet in sea water, wash it with warm water and carefully dry it.

Small tears in the top or bottom surface (not normally the ribs) of a canopy can be repaired with a patch of self-adhesive ripstop nylon. Tears no longer than 100 mm can be repaired in this way providing they are not in a high-stress area. If you have any doubt about the airworthiness of your canopy please contact your dealer or BGD directly.

## Servicing / Inspection

It is important to have your glider regularly serviced. It should have a thorough check / inspection every 24 months or every 150 flight hours, whichever occurs first. This check must be made by the manufacturer, importer, distributor or other authorised persons. The checking must be proven by a stamp on the certification sticker on the glider as well in the service book. BGD will offer an inspection service every winter. This is a comprehensive service which checks line lengths and strength, fabric porosity and tear strength and a variety of other tests and we strongly advise all pilots to take advantage of this.

Please print out the service pages from this manual, fill in the number of flights and hours flown in the Service Record, and send together with your glider when it goes for inspection or servicing. The manufacturer will only accept responsibility for paraglider lines and repairs which we have produced and fitted or repaired ourselves.

## Environmental protection and recycling

Our sport takes place in the natural environment, and we should do everything to preserve our environment. A glider is basically made of nylon, synthetic fibres and metal. At the end of your paraglider's life span, please remove all metal parts and put the different materials in an appropriate waste/recycling plant.

## 8. Technical data

### Materials

The MAGIC MOTOR is made from the following quality materials:

Top surface:	Porcher Skytex 38g/m <sup>2</sup>
Bottom surface:	Porcher Eazyfly white
Internal structure:	Porcher Skytex 38g/m <sup>2</sup> Hard White
Nose reinforcing:	Plastic wire PA orange 2.4mm
Risers:	20 mm black nylon
Upper lines:	Edelrid 8000U-70, 90 (non sheathed)
Middle lines:	Edelrid 8000U-120, 90 (non sheathed)
Lower lines:	Liros TSL 280, 190, 140 (sheathed)
Brakes:	Liros DSL 70, 110, 350 (sheathed)

Spare parts can be obtained directly from BGD or through our network of registered BGD repair shops.

For a full list check [www.flybgd.com](http://www.flybgd.com)

## Specifications

	XS	S	M	ML	L
Linear scaling factor	0.92	0.96	1	1.04	1.08
Projected area (m <sup>2</sup> )	17.83	19.53	21.23	22.93	24.63
Flat area (m <sup>2</sup> )	21	23	25	27	29
Glider weight (kg)	4.5	4.7	5.0	5.3	5.6
Total line length (m)	202	222	241	260	280
Height (m)	6.2	6.5	6.8	7.0	7.3
Number of main lines	3/4/3	3/4/3	3/4/3	3/4/3	3/4/3
Cells	40	40	40	40	40
Flat aspect ratio	4.67	4.67	4.67	4.67	4.67
Projected aspect ratio	3.51	3.51	3.51	3.51	3.51
Root chord (m)	2.59	2.71	2.83	2.94	3.05
Flat span (m)	10.05	10.51	10.96	11.39	11.80
Projected span (m)	7.90	8.27	8.62	8.96	9.28
Total flying weight for free flight (kg)	50-70	60-80	75-95	88-108	100-125
Total flying weight for paramotor(kg)*	50-95	60-105	75-120	88-133	100-150
Trim speed** (km/h)	38	38	38	38	38
Trimmers-out speed** (km/h)	42	42	42	42	42
Top speed** (km/h)	46	46	46	46	46
Min sink (m/s)	1	1	1	1	1
Best glide	9	9	9	9	9
Maximum motor power kW	25	25	25	25	25
Homologation	DGAC/EN A	DGAC/EN A	DGAC/EN A	DGAC/EN A	DGAC/EN A

\* DGAC certification only

\*\* Values for straight and horizontal flight under power

## Overview of glider parts



## PPG Risers

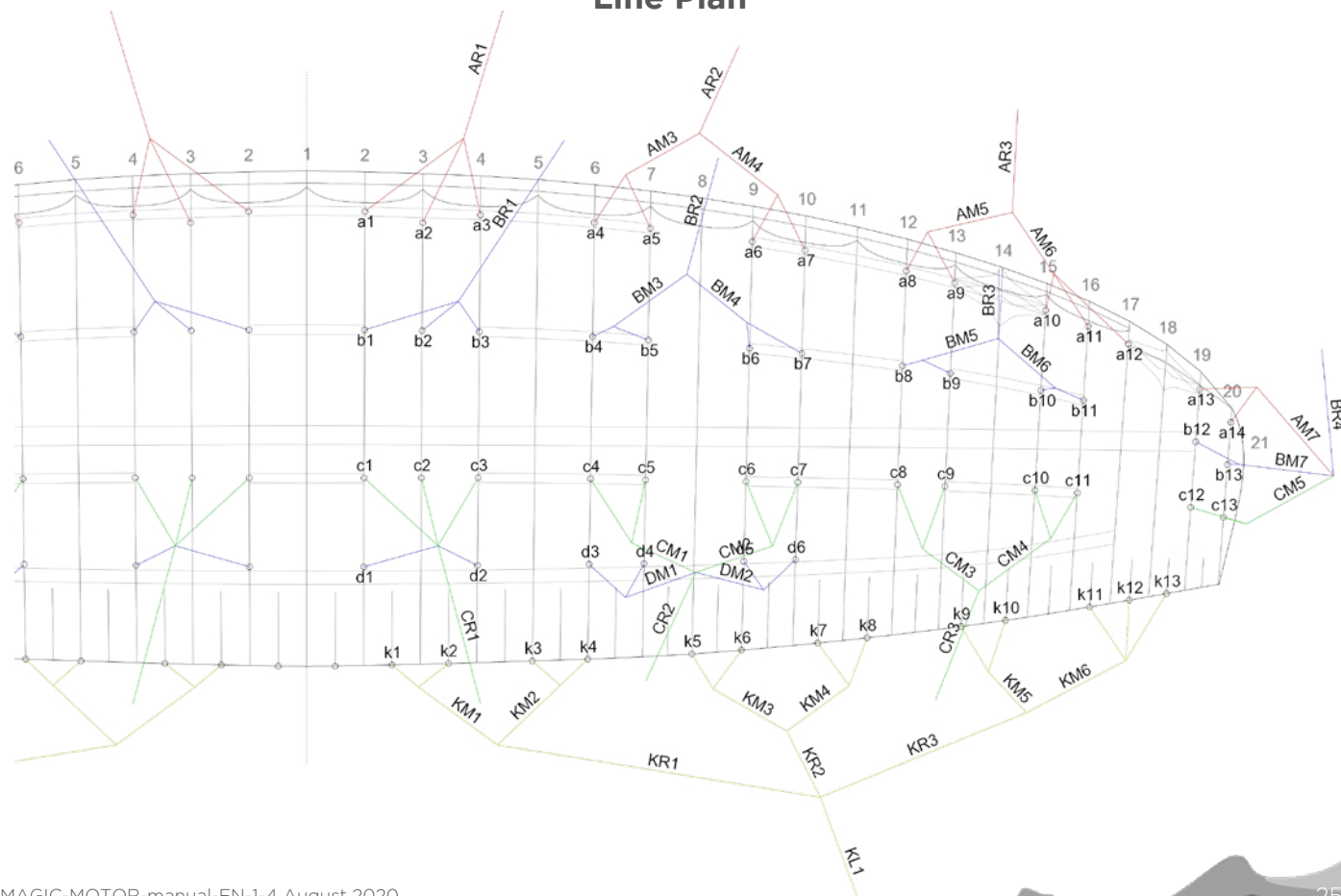


## Brake and speedbar travel

Size	Accelerator range	Brake range
XS	12cm	65cm
S	14cm	70cm
M	14cm	75cm
ML	14cm	80cm
L	14cm	85cm



## Line Plan



## Line Lengths

All measures are in mm, with 50N line tension, this tension being slowly and gradually applied before taking the measurement.

The lengths are measured from the lower surface of the canopy and include the risers.

During the homologation tests the EN have checked the line lengths on the test model against the lengths quoted in the manual, after the test flights have been done.

The difference between the manual lengths and those measured on the test glider can not be greater than 10mm. The measured lengths for the test glider can be found in the appendix of this manual.

## Size XS

## Overall line lengths

	A	B	C	D	K
1	6192	6084	6115	6259	6468
2	6134	6046	6081	6240	6320
3	6175	6066	6098	6216	6179
4	6188	6090	6109	6190	6124
5	6153	6055	6083	6190	6043
6	6148	6050	6084	6194	5975
7	6179	6082	6108		5932
8	6115	6026	6087		5947
9	6060	5975	6014		5866
10	5970	5907	5958		5829
11	5905	5885	5978		5819
12	5884	5635	5726		5804
13	5689	5549	5654		5831
14	5554				

## Individual line lengths

A		B		C		D		K	
a1	1225	b1	1210	c1	1343	d1	1490	k1	497
a2	1168	b2	1173	c2	1310	d2	1468	k2	348
a3	1210	b3	1194	c3	1328	d3	742	k3	483
a4	619	b4	486	c4	738	d4	717	k4	429
a5	585	b5	452	c5	714	d5	601	k5	432
a6	465	b6	481	c6	585	d6	606	k6	365
a7	497	b7	515	c7	610			k7	399
a8	663	b8	610	c8	602			k8	417
a9	609	b9	561	c9	530			k9	380
a10	829	b10	618	c10	387			k10	343
a11	766	b11	597	c11	408			k11	477
a12	748	b12	350	c12	306			k12	464
a13	376	b13	265	c13	235			k13	490
a14	242								
				CM1	1639	DM1	1743	KM1	1349
				CM2	1769	DM2	1859	KM2	1073
AM3	1420	BM3	1510	CM3	573			KM3	1095
AM4	1535	BM4	1476	CM4	660			KM4	1018
AM5	1620	BM5	1195	CM5	613			KM5	1320
AM6	1310	BM6	1070					KM6	1175
AM7	506	BM7	477						
AR1	4474	BR1	4381	CR1	4288			KR1	2200
AR2	3662	BR2	3607	CR2	3254			KR2	2088
AR3	3347	BR3	3734	CR3	4433			KR3	1746
		BR4	4331					KL1	2398

## Size S

## Overall line lengths

	A	B	C	D	K
1	6480	6367	6399	6551	6828
2	6421	6327	6364	6531	6671
3	6465	6348	6383	6509	6524
4	6479	6376	6395	6482	6466
5	6442	6340	6369	6483	6363
6	6438	6336	6370	6488	6292
7	6471	6369	6395		6248
8	6402	6311	6375		6265
9	6345	6258	6299		6205
10	6252	6187	6240		6166
11	6185	6164	6262		6154
12	6162	5902	5997		6139
13	5959	5812	5921		6166
14	5818				

## Individual line lengths

A		B		C		D		K	
a1	1282	b1	1267	c1	1406	d1	1561	k1	521
a2	1224	b2	1228	c2	1372	d2	1538	k2	365
a3	1269	b3	1250	c3	1392	d3	777	k3	506
a4	649	b4	509	c4	773	d4	751	k4	450
a5	613	b5	474	c5	749	d5	630	k5	453
a6	487	b6	504	c6	612	d6	636	k6	383
a7	521	b7	539	c7	638			k7	418
a8	694	b8	639	c8	631			k8	437
a9	638	b9	588	c9	556			k9	398
a10	868	b10	647	c10	406			k10	360
a11	803	b11	625	c11	429			k11	499
a12	783	b12	367	c12	321			k12	486
a13	394	b13	278	c13	246			k13	514
a14	254								
				CM1	1713	DM1	1824	KM1	1411
				CM2	1851	DM2	1946	KM2	1123
				CM3	599			KM3	1145
AM3	1485	BM3	1579	CM4	690			KM4	1066
AM4	1607	BM4	1545	CM5	641			KM5	1381
AM5	1694	BM5	1250					KM6	1230
AM6	1371	BM6	1120						
AM7	530	BM7	499						
AR1	4705	BR1	4607	CR1	4509			KR1	2300
AR2	3858	BR2	3801	CR2	3431			KR2	2169
AR3	3529	BR3	3935	CR3	4666			KR3	1830
		BR4	4559					KL1	2569

## Size M

## Overall line lengths

	A	B	C	D	K
1	6791	6665	6710	6862	7123
2	6735	6626	6673	6843	6960
3	6777	6649	6695	6822	6806
4	6793	6675	6707	6794	6746
5	6754	6638	6680	6796	6641
6	6751	6634	6682	6802	6567
7	6786	6672	6709		6520
8	6714	6622	6705		6539
9	6655	6567	6626		6475
10	6553	6493	6564		6435
11	6484	6470	6587		6423
12	6463	6200	6308		6409
13	6258	6106	6227		6436
14	6110				

## Individual line lengths

A		B		C		D		K	
a1	1336	b1	1319	c1	1441	d1	1596	k1	544
a2	1281	b2	1281	c2	1405	d2	1574	k2	382
a3	1324	b3	1305	c3	1428	d3	810	k3	528
a4	677	b4	531	c4	806	d4	783	k4	470
a5	639	b5	495	c5	781	d5	657	k5	473
a6	508	b6	525	c6	638	d6	664	k6	400
a7	544	b7	564	c7	666			k7	436
a8	724	b8	666	c8	658			k8	457
a9	666	b9	613	c9	580			k9	415
a10	905	b10	674	c10	424			k10	376
a11	837	b11	652	c11	448			k11	521
a12	817	b12	381	c12	334			k12	509
a13	411	b13	288	c13	254			k13	537
a14	264								
				CM1	1759	DM1	1871	KM1	1471
				CM2	1904	DM2	1999	KM2	1171
AM3	1766	BM3	1645	CM3	625			KM3	1194
AM4	1429	BM4	1611	CM4	719			KM4	1111
AM5	570	BM5	1302	CM5	689			KM5	1439
AM6	1332	BM6	1167					KM6	1282
AM7	595	BM7	541						
AR1	4919	BR1	4816	CR1	4745			KR1	2396
AR2	4039	BR2	3975	CR2	3624			KR2	2262
AR3	3694	BR3	4127	CR3	4903			KR3	1909
		BR4	4761					KL1	2685

## Size ML

## Overall line lengths

	A	B	C	D	K
1	7061	6944	6971	7138	7401
2	6998	6903	6935	7120	7232
3	7047	6927	6957	7099	7073
4	7066	6952	6972	7071	7010
5	7026	6914	6944	7075	6901
6	7023	6911	6948	7080	6825
7	7060	6950	6976		6776
8	6988	6899	6968		6796
9	6926	6841	6886		6732
10	6825	6764	6823		6691
11	6753	6739	6845		6679
12	6731	6447	6547		6664
13	6505	6346	6465		6692
14	6353				

## Individual line lengths

A		B		C		D		K	
a1	1389	b1	1372	c1	1524	d1	1694	k1	566
a2	1327	b2	1332	c2	1489	d2	1673	k2	398
a3	1377	b3	1357	c3	1512	d3	842	k3	550
a4	704	b4	552	c4	838	d4	815	k4	489
a5	665	b5	515	c5	812	d5	684	k5	492
a6	528	b6	546	c6	664	d6	690	k6	417
a7	566	b7	586	c7	693			k7	453
a8	753	b8	694	c8	684			k8	475
a9	692	b9	638	c9	603			k9	432
a10	941	b10	702	c10	442			k10	392
a11	870	b11	678	c11	465			k11	542
a12	849	b12	399	c12	349			k12	529
a13	427	b13	302	c13	268			k13	558
a14	276								
				CM1	1759	DM1	1978	KM1	1528
				CM2	1854	DM2	2113	KM2	1217
AM3	1607	BM3	1709	CM3	2006			KM3	1240
AM4	1741	BM4	1675	CM4	649			KM4	1155
AM5	1835	BM5	1354	CM5	747			KM5	1495
AM6	1485	BM6	1213					KM6	1333
AM7	575	BM7	541						
AR1	5138	BR1	5036	CR1	4923			KR1	2488
AR2	4227	BR2	4164	CR2	3762			KR2	2350
AR3	3872	BR3	4321	CR3	5116			KR3	1986
		BR4	4987					KL1	2792

## Size L

## Overall line lengths

	A	B	C	D	K
1	7314	7190	7223	7396	7772
2	7249	7148	7186	7378	7597
3	7300	7173	7209	7357	7433
4	7321	7201	7226	7329	7370
5	7279	7163	7197	7333	7256
6	7274	7160	7201	7339	7178
7	7313	7201	7231		7127
8	7238	7148	7224		7148
9	7174	7089	7138		7082
10	7070	7009	7073		7040
11	6995	6983	7097		7028
12	6973	6682	6788		7013
13	6745	6580	6703		7042
14	6587				

### Individual line lengths

A		B		C		D		K	
a1	1439	b1	1422	c1	1580	d1	1756	k1	587
a2	1375	b2	1381	c2	1544	d2	1735	k2	413
a3	1427	b3	1407	c3	1568	d3	873	k3	570
a4	730	b4	572	c4	869	d4	846	k4	509
a5	690	b5	535	c5	842	d5	709	k5	510
a6	547	b6	566	c6	688	d6	716	k6	433
a7	587	b7	608	c7	719			k7	470
a8	781	b8	719	c8	710			k8	493
a9	718	b9	662	c9	625			k9	448
a10	976	b10	728	c10	458			k10	407
a11	902	b11	703	c11	483			k11	562
a12	881	b12	414	c12	362			k12	549
a13	443	b13	313	c13	278			k13	579
a14	286								
				CM1	1921	DM1	2049	KM1	1583
				CM2	2079	DM2	2190	KM2	1262
AM3	1665	BM3	1770	CM3	672			KM3	1285
AM4	1804	BM4	1736	CM4	774			KM4	1197
AM5	1901	BM5	1403	CM5	720			KM5	1549
AM6	1539	BM6	1257					KM6	1382
AM7	596	BM7	561						
AR1	5343	BR1	5236	CR1	5119			KR1	2577
AR2	4400	BR2	4335	CR2	3918			KR2	2436
AR3	4034	BR3	4499	CR3	5323			KR3	2060
		BR4	5190					KL1	2998

## 9. Service Booklet

### Test Flight Record

Model

Size

Serial Number

Colour

Date of test flight

Company signature and stamp



## Service Record

**Service No 1:**

Date :

Stamp - Signature :

No flights :

Type of service :

**Service No 2:**

Date :

Stamp - Signature :

No flights :

Type of service :

**Service No 3:**

Date :

Stamp - Signature :

No flights

Type of service :

## Owner Record

Pilot No 1

First name

Family name

Street

City

Post code

Country

Telephone

Email:

## Owner Record

Pilot No 2

First name

Family name

Street

City

Post code

Country

Telephone

Email:

## 10. Closing Words

Your new paraglider promises many hours of safe and enjoyable flying, provided you treat it with care and always respect the potential dangers of aviation.

Please always remember that flying can be dangerous and your safety depends on you. With careful treatment your wing should last for many years. It has been tested under current international airworthiness standards, and these represent the current knowledge concerning the safety of a glider. However, since there are still many unknown issues, for example the effective lifespan of the current generation of gliders and how strong the material aging can be accepted without affecting the airworthiness. There are natural forces that can threaten your safety, regardless of the quality of construction or the condition of your glider. Your security is ultimately your responsibility. We strongly recommend that you fly carefully, adapt to the weather conditions and keep your safety in mind. Flying in a club or a school with experienced pilots is highly recommended. We recommend that you fly with a standard harness with back protection and a reserve parachute. Always use good equipment and an approved helmet.

See you in the sky!

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