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VIVA

EN-A

Discover the Sky

Manual



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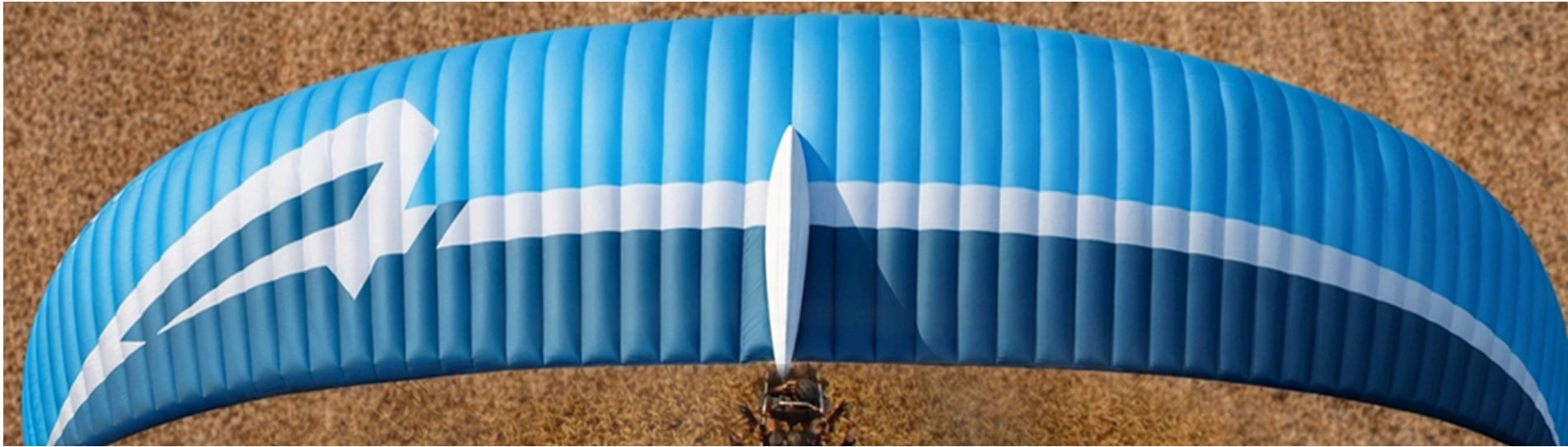
APCO AVIATION 



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WARNING

This is not a training manual. It is extremely dangerous to yourself and others to attempt to use this product without first completing a course given by a qualified instructor.

Apco Aviation's products are carefully manufactured and inspected by the factory.

Please use the product only as described in this manual. Do not make any changes to the product.

AS WITH ANY SPORT – WITHOUT TAKING THE APPROPRIATE PRECAUTIONS, PARAGLIDING CAN BE DANGEROUS.



1. DISCLAIMER OF LIABILITY

Taking into consideration the inherent risk in paragliding or hang gliding, (free flying and motorized), it must be expressly understood that the manufacturer and seller do not assume any responsibility for accidents, losses and direct or indirect damage following the use or misuse of this product.

APCO Aviation Ltd. is engaged in the manufacture and sale of hang gliding, paragliding, motorized Para/hang gliding and emergency parachute equipment. This equipment should be used under proper conditions and after proper instruction from a qualified instructor. APCO Aviation Ltd. has no control over the use of this equipment and a person using this equipment assumes all risks of damage or injury.

APCO Aviation Ltd. disclaims any liability or responsibility for injuries or damages resulting from the use of this equipment. The glider is designed to perform in the frame of the required class as certified.

2. INTRODUCTION

The VIVA is APCO's next-generation EN-A certified paraglider, designed from the ground up to deliver an exceptional flying experience for beginner to intermediate pilots. Building on APCO's legendary tradition of durability and safety, the VIVA brings together modern construction techniques, optimised aerodynamic profiles and easy-to-handle flight characteristics in a package that excites and reassures from the very first inflation.

Available in three sizes – S, M and L – the VIVA covers a broad range of pilot weights while maintaining the same outstanding character across the range. Its clean three-riser architecture (A, A5, B & C) simplifies ground handling: reverse or forward launch is always straightforward, and the wing rises predictably overhead whether in calm or windy conditions.

TAKE OFF

Effortless and intuitive. The modern leading-edge profile ensures the wing rises slowly and controllably overhead, giving the pilot time to assess the inflation before committing to the run.





LANDING

Remarkably stall-resistant and forgiving. A generous flare window slows the glider almost to a standstill, making it the ideal teaching and progression tool.

THERMALLING

The VIVA banks smoothly into coordinated turns and tracks the core with confidence. Excellent climb performance and responsive feedback make this one of APCO's finest EN-A thermalling wings.

PERFORMANCE

Glide at trim speed is among the best in the EN-A class. The VIVA retains efficiency throughout its speed range: pushing the speed system produces a meaningful additional speed margin with minimal penalty in sink rate.

PILOT FEEDBACK

Simple, honest and reassuring. The VIVA communicates clearly through the brakes and weight shift, yet remains benign when inputs are excessive.

CONSTRUCTION

Built to APCO's demanding standards for durability. Lightweight, zero-porosity ripstop nylon cloth is paired with a nylon-rod reinforced leading edge and a modern rib construction designed to withstand the rigours of school and training use over many seasons.

3. PARAMOTOR VERSION

The VIVA is available in a paramotor version, designed and thoroughly tested under power. Its high internal pressure and stable pitch behaviour deliver excellent handling even at full thrust.





The VIVA paramotor version offers an ideal solution for paramotor schools and pilots seeking EN-A certification combined with effortless handling. Short ground runs – even in nil-wind conditions – and high fuel efficiency make it particularly suited to training and recreational powered flying.

The paramotor version is delivered with dedicated paramotor risers equipped with trimmers (see Section 12). Paramotor risers can be ordered separately – contact your dealer for details.

4. TECHNICAL DATA

Serial production data, June 2026. All performance figures measured at sea level at optimum wing loading.



SIZE	S	M	L
Code	TBD	TBD	TBD
Cells	36	38	40
Area [m ²]	24.9	26.5	28.25
Area (projected) [m ²]	20.9	22.3	23.7
Span (incl. Stabiliser) [m]	10.6	11.3	12.0
Span (projected) [m]	8.2	8.7	9.3
Aspect Ratio	4.8	4.8	4.8
Aspect Ratio (projected)	3.22	3.40	3.65
Weight Range (incl. Wing) [kg]	70–90	80–100	90–115
Canopy Weight [kg]	~4.2	~4.4	~4.7
Root Chord [m]	2.70	2.85	3.05
Length of Lines on B [m]	6.1	6.5	6.9
Total Length of Lines [m]	~290	~305	~325
Number of Risers	3+1 (A, A5, B & C)		
Speed Bar Travel	12 cm		
Trimmers	No (paramotor version available on request)		



GLIDER PERFORMANCE DATA	
V-min	~23 km/h
V-trim	~38 km/h
V-max	~50 km/h
Min Sink (at optimum wing loading)	~1.1 m/s
Speed System Travel	120 mm

LINES – Serial production specification (Cousin, APCO EN-A S/M/L, v1.3):



Line Group	Material	Specification	Ø (mm)	Strength	Colour
Top (a1–a9, b1–b7)	Dyneema	CTL910130	1.1	95 kg	Yellow
Mid-A (MA1–MA2)	Aramid	CTL900230	1.8	230 kg	Red
Mid-A (MA3)	Aramid	CTL900160	1.5	160 kg	Green
Mid-A (MA4, ST)	Aramid	CTL900120	1.2	120 kg	Green
Lower A (AI)	Aramid	CTL900360	2.1	360 kg	Red
Lower A (AII)	Aramid	CTL900320	1.9	320 kg	Red
Mid-B (MB1–MB2)	Aramid	CTL900230	1.8	230 kg	Yellow
Mid-B (MB3)	Aramid	CTL900160	1.5	160 kg	Green
Mid-B (MB4)	Aramid	CTL900120	1.2	120 kg	Green
Lower B (BI)	Aramid	CTL900360	2.1	360 kg	Yellow
Lower B (BII)	Aramid	CTL900320	1.9	320 kg	Yellow
C lines (c1–c15/16)	Aramid	CTL900120	1.2	120 kg	Green
Mid-C (MC1–MC2)	Aramid	CTL900160	1.5	160 kg	Green
Lower C (CI)	Aramid	CTL900320	1.9	320 kg	Green
Lower C (CII)	Aramid	CTL900160	1.5	160 kg	Green
D lines (d1–d7)	Aramid	CTL900120	1.2	120 kg	Green
Brake top (br1–br9)	Aramid	CTL900120	1.2	120 kg	Green
Brake mid (MBR1–MBR3)	Aramid	CTL900120	1.2	120 kg	Green
Brake main	Dyneema	CTL910190B003	2.0	190 kg	—
Stabiliser (ST)	Aramid	CTL900120	1.2	120 kg	Green



FABRIC	
Sail Cloth	"Zero Porosity" Ripstop Nylon (P.U. coated + siliconised)
Warranty	3 Years / 250 hours

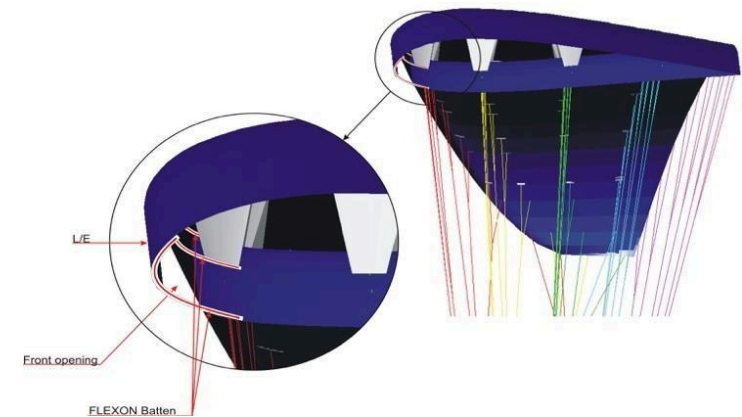
5. CONSTRUCTION

The glider is constructed with a top and bottom surface, connected by ribs. One top and bottom panel, together with the connecting ribs is called a cell. Each cell has an opening on the front lower part. The cells fill with air, forcing the panels to take the shape dictated by the air-foil (rib) section.

On either side the wing ends in a stabiliser or wing tip, which provides straight-line (Yaw) stability and produces some outward lift to keep the span-wise tension.

The front part of the ribs use APCO's FLEXON batten system to keep the leading edge shaped at high speeds and in turbulent air. They also improve the performance and the launch characteristics of the glider.

The line hook-up points are made of Dyneema and embedded in the bottom surface of the wing for minimal drag and maximum performance.





6. MATERIALS

The glider is made from tear-resistant Ripstop Nylon cloth, which is P.U. coated to zero porosity and then siliconised to give the fabric high resistance to the elements. Different cloth is used for the top surface, bottom surface and ribs due to their different functions.

The lines are made of superaramid covered with a polyester sheath for protection against UV, wear and abrasion. The bottom section of the brake lines is made of Dyneema because of its superior mechanical properties.

The maillon quick links that attach the lines to the risers are made of stainless steel.

COLOURS

The VIVA is supplied in three standard colour schemes — Winter #9, Forest #18 and Zest #12 (see cover). Custom colour combinations are available on request; contact your dealer or APCO Aviation.

7. FLEXON® BATTEN SYSTEM

New generation FLEXON® batten system is incorporated in the leading edge of the ribs, ensuring perfect profile shape (instead of traditional Mylar reinforcement). FLEXON® battens reduce the weight of the glider by an additional 500 g and, unlike Mylar reinforcement, will guarantee no deterioration in performance or launch characteristics over the life of the glider.

An additional advantage of the FLEXON batten is that it is practically indestructible, safeguarding the performance and launch over the lifespan of the glider.





8. TRIMMING

All APCO gliders are trimmed for optimum performance combined with unsurpassed safety. It is very important not to re-trim or tamper with any of the lines or risers as this may alter the performance and safety. Trimming of the brake line should be done in accordance with this manual and carefully checked before flying.

9. HARNESS

All of APCO's gliders are developed with the use of ABS (Automatic Bracing System) type harnesses without cross bracing. We recommend the use of an ABS harness with all our gliders. Most certified harnesses may be used with our gliders. For best safety and performance we recommend an APCO harness equipped with a Mayday emergency parachute.

CAUTION:

WE RECOMMEND NOT TO USE CROSS BRACING STRAPS.

APCO GLIDERS ARE DEVELOPED AND TESTED WITHOUT THE USE OF CROSS BRACING. USING AN ABS HARNESS WITH CHEST STRAP SET AT THE SPECIFIED WIDTH (CHECK THE CERTIFICATION STICKER ON YOUR GLIDER) WILL RESULT IN THE HIGHEST PASSIVE SAFETY ON YOUR GLIDER.

10. SPEED SYSTEM

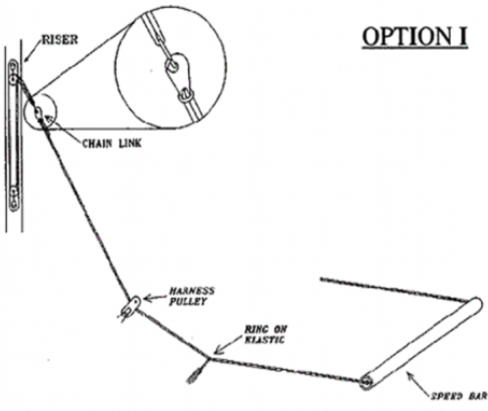
ASSEMBLY & ADJUSTMENT



APCO gliders can be ordered with the Wonder-Bar, which makes reaching the speed bar effortless. First attach the harness to the glider. Remove the Brummel hooks from the end of the accelerator line attached to the speed bar, then thread it through the elasticised ring on the harness, through the harness pulley and then re-attach it to the Chain link with a larks-head knot.

OPTION I

Sit in the harness and have someone hold the riser up in a flying position for you. Adjust the speed bar line by pulling the end through the speed bar tube and moving the knot. The bar should be about 10 cm away from the front of the harness seat. Do not adjust the speed system too short, as this will cause it to be activated permanently while flying, which can be dangerous.



COMPATIBILITY

APCO gliders are supplied with a speed system compatible with most harnesses on the market today. Follow your harness manual for connecting your speed system. Do a hang test to ensure that the adjustment is correct.

SPEED BAR & TRIMS (Paramotor Version)

On the VIVA Paramotor Version, the Speed Bar should NOT be used with Trims open. Use one or the other, not both together.

WARNING

The use of the speed system in turbulent conditions or close to the ground is dangerous.

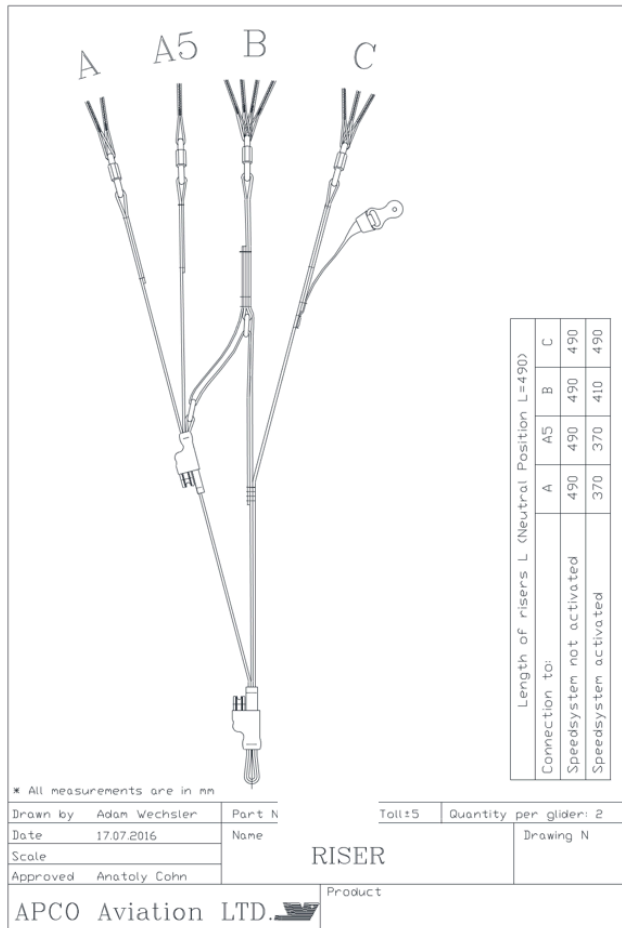
While flying with the accelerator, the glider has a reduced angle of attack and is therefore more susceptible to turbulence and may



collapse or partially deflate.

The accelerator should immediately be released in this case.

11. RISERS



The VIVA risers feature a split A riser. The primary A-riser attaches to the central A lines (A1 & A3). The second A-riser (A5) is attached to the outermost A line. This arrangement facilitates Big Ears and Tip Tucks while maintaining clean riser architecture.

At no time should the pilot change the risers or use risers not intended for this specific glider, as this will affect the performance, safety and void the certification of the glider. The fully activated travel is 120 mm.

The paramotor version of the VIVA is equipped with trimmers – see Section 12 for full details.

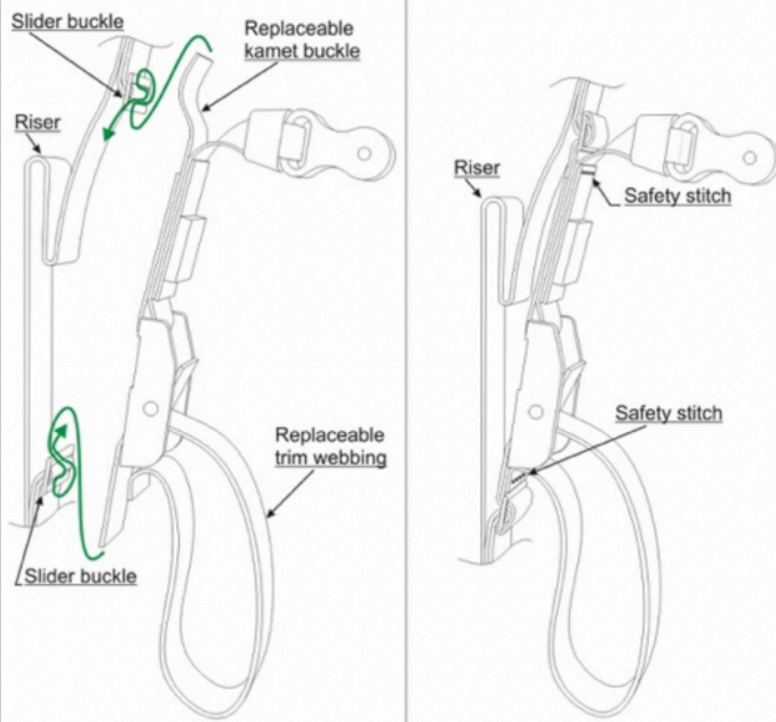


VIVA risers — paramotor version (left) and paraglider version (right).



12. TRIMMERS *

Replaceable trimmer system



1. Undo the safety stitch of kamet or trim webbing, depending on what requires replacement.
2. Take out the kamet or trim webbing requiring replacement, by removing it from the slider buckle.
3. Replace trim webbing or kamet with new by guiding it back through the slider buckle, verify the trim range is unchanged, on trim speed all the riser branches are at equal height. When kamet fully released it should not retain any load (all the load is on the fully released D branch of the riser).
4. Restitch the safety stitch to lock the configuration of the trim in place.

The neutral setting is when the A/B/C riser legs are of equal length in flight (blue mark on the trim webbing).

For take-off and landing, the trimmers should be in the closed (minimum trim speed) position. They can be set asymmetrically to compensate for torque effect.

The VIVA Speed Bar should NOT be used with Trims open – use one or the other, not both together.

REPLACEABLE TRIM SYSTEM

The Trim Tabs should be replaced if they begin to show signs of wear or start slipping. Replacement should be done by a qualified person – consult your dealer.



* Paramotor Version only

The VIVA conforms to EN certification with the trimmers in the closed position.

13. EMERGENCY PARACHUTE ATTACHMENT

It is recommended to use a certified rescue parachute when flying. Attaching the rescue parachute should be done in accordance with the recommendation of the harness and reserve parachute manufacturer.

14. GENERAL INSPECTION

Pilots, please ensure that your glider has been test flown and fully checked by your dealer before taking it into your possession. Verify that the dealer checked and confirms that the glider is airworthy.

TRIKE ATTACHMENT & INSPECTION

Due to the very wide assortment of trikes on the market, it is necessary to verify that the specific trike can be successfully coupled with the wing. Please make sure your dealer performs the following procedures before first flight:



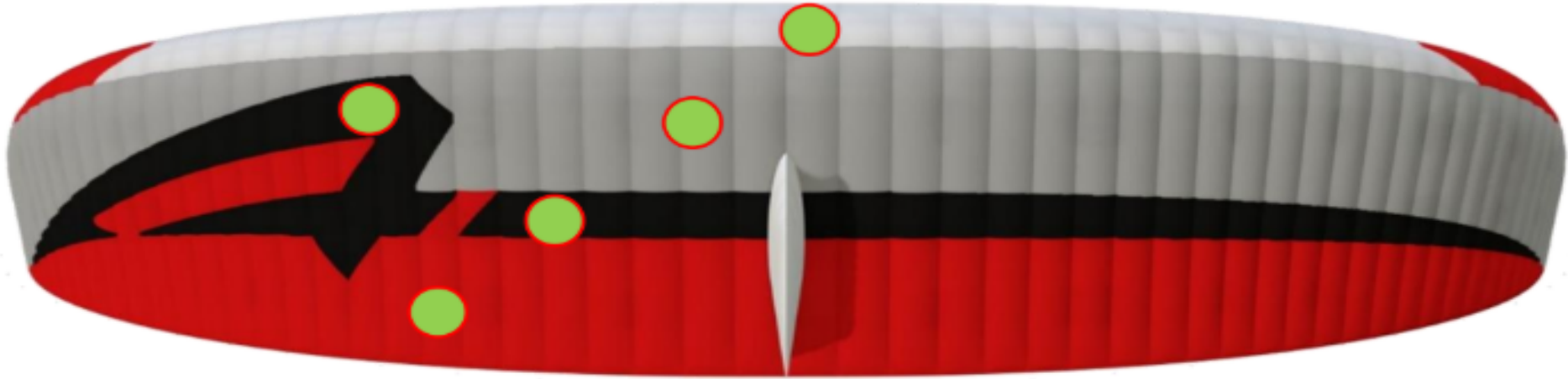
- A. It was checked with APCO that the specific trike can be flown with your new wing.
- B. Wing to be fully inspected by the dealer.
- C. Wing to be ground handled and visually checked while inflated.
- D. Connection method to a Trike in line with the Trike manufacturer's recommendation.
- E. Before first take-off perform a “taxiing” test checking all aspects of the set-up without taking off (roll/yaw stability, pitch stability, stall tendency, brake response etc.).
- F. Only once the wing passes the taxiing test – make the actual test flight.
- G. Take the wing into your possession only after your dealer confirms airworthiness coupled with your trike.

15. ANNUAL / PERIODICAL AIRWORTHINESS INSPECTION

It is highly recommended that your glider (and other equipment) undergo a Periodical Airworthiness Inspection by APCO, or an APCO approved / appointed service centre. This is recommended every 24 months or every 100 hours, whichever comes first.

POROSITY

Porosity is measured with a calibrated Porosimeter. It should be measured in at least 5 different places on the upper surface. The upper surface at 20–35% chord (from L/E) is most prone to becoming porous, and is thus the most important section to test. It is also important to test the different cloth types and different colours used.



LINE MAINTENANCE

Superaramid lines are known to be sensitive to the influence of the elements. They must be carefully inspected periodically.

- Avoid sharp bending and squeezing of lines.
- Take care that people do not step on the lines.
- Do not pull on the lines if they are caught on rocks or vegetation.
- Avoid getting the lines wet. If they do get wet, dry them as soon as possible at room temperature and never store them wet.



IT IS STRONGLY RECOMMENDED TO CHECK THE LINES ON EVERY PARAGLIDER EVERY 24 MONTHS OR EVERY 100 HOURS.

ONE OF EACH A, B AND C LINE MUST BE TESTED FOR MINIMUM 50% OF THE RATED STRENGTH.

IF THE LINE FAILS UNDER THE LOAD TEST OR DOES NOT RETURN TO ITS SPECIFIED LENGTH, ALL CORRESPONDING LINES MUST BE REPLACED.

NEVER REPLACE THE LINES WITH DIFFERENT DIAMETER OR TYPE OF LINES.

CHANGING LINE DIAMETER/STRENGTHS CAN HAVE FATAL CONSEQUENCES.

BRAKE ADJUSTMENT



Before the first flight, the pilot/dealer has to inflate the glider to check brake length and if needed adjust the brake setting. It is important that the brakes are not set too short. If the glider is above your head the brakes should not be pulling the trailing edge down. A good setting is to have about 10 cm of slack in the brake from the brake guide (pulley) on the riser to the activation point of the brakes.



FIRST CHECK AND PREFLIGHT INSPECTION

- Connection points between the glider and the harness.
- Check that there are no lines twisted, tangled or knotted.
- Check that the risers and speed system are hooked up to the harness correctly.

REGULAR INSPECTION CHECKS

- Damage to lines, webbing and thread on the stitching of the harness and risers.
- The stainless-steel connection links on the risers are not damaged and are fully closed.
- The pulleys of the speed system are free to move and the lines are not twisted.
- The condition of the brake lines, stainless steel rings and the security of knots.
- The sewing and connection of the lines.
- Damage to hook-up points on the glider, internal damage to ribs and diagonal ribs.
- Damage to the top and bottom panels and seams between panels.

16 . TAKE OFF

As this is not a training manual, we will only briefly go through the different launch techniques to help you get the most out of your glider.



LAYOUT

Pre-flight check should be done before every flight. Spread the glider on the ground. Spread the lines, dividing them into groups: A, A5, B, C and brake lines left and right. Make sure the lines are free and not twisted or knotted. Lay out the glider in a horseshoe shape to ensure all lines are equally tensioned on launch, resulting in an even inflation.

- The FLEXON rib reinforcements will keep the leading edge open for easy inflation.
- The most common reason for a bad launch is a bad layout!

ALPINE LAUNCH OR FORWARD LAUNCH

The VIVA has very good launch behaviour in no-wind conditions. For best results, lay out the glider and position yourself in the centre of the wing with the lines almost tight. With a positive and constant force, inflate the wing holding only the A-risers and smoothly increase your running speed. The wing will quickly inflate and settle above your head without the tendency to stick behind. After you leave the A-risers, apply about 15% brakes and the VIVA will gently lift you off the ground.

STRONG WIND AND REVERSE LAUNCH

The VIVA has a lot of lifting power and care should be taken in strong wind. It is advisable to have an assistant hold you when attempting a strong wind launch. It also helps if you walk towards the canopy and leave the A-riser just before the glider gets above your head. Then pull a little brake to stop the wing from overshooting, but not too much as the glider might pull you off your feet too early.

TOW OR WINCH LAUNCHING



All APCO gliders are well suited for winching and have no bad tendencies on the winch. Very little brake need be applied on launch and during the tow. Directional changes can be made with weight shift rather than brakes. While on tow, the brake pressure will be higher and more force may be needed to make corrections than in normal flight.

17. FLIGHT TECHNIQUES

The VIVA is a pleasant glider to fly with excellent performance, designed for recreational and cross-country flying.

FLYING SPEED

- With 0% brake the VIVA will fly at approximately 38 km/h with a sink rate of about 1.3 m/s.
- At 25% brake the glider will fly at approximately 32 km/h with minimum sink rate ~1.1 m/s.
- The best glide angle is achieved with 0% brakes and approximately 10% speed system.
- With 80% brake the glider will fly at about 25 km/h and will be close to the stall point (~23 km/h).

WARNING:

The use of the speed system in turbulent conditions or close to the ground is dangerous. While flying with the accelerator, the glider has a reduced angle of attack and is therefore more susceptible to turbulence and may collapse or partially deflate. The accelerator should immediately be released in this case.

**CAUTION:**

APART FROM WHEN FLARING AT LANDING THERE SHOULD BE NO REASON TO FLY WITH 70% TO 100% BRAKE.

THE SINK RATE OF THE GLIDER WILL BE EXCESSIVE AND THERE WILL BE A POSSIBILITY OF ENTERING A DEEP STALL OR FULL STALL SITUATION.

THERE IS ALSO THE RISK OF GOING NEGATIVE OR ENTERING A SPIN WHEN ATTEMPTING TO TURN NEAR THE STALL SPEED.

THERMAL FLYING

The VIVA has excellent thermalling capacity. In light lift it is advised to make flat turns to keep the glider from banking too much. In strong lift conditions it is most effective to make small turns in the core with relatively high bank. For the best climb rate in ridge lift we recommend using about 15% to 20% brake.

ASYMMETRIC COLLAPSE

If one side of the glider partially folds or collapses it is important to keep your flying direction by applying weight shift and some brake on the opposite side. The wing should re-inflate on its own. To help re-inflation it is possible to pull some brake on the collapsed side and release immediately. In the event of a big deflation (i.e. 70%), it is important to apply brake on the inflated side, but care must be taken not to pull too much as you could stall the flying side.



CRAVAT

In case a cravat should occur, keep your flying direction by applying some brake on the opposite side and then it can usually be opened by pulling down on the stabilo line of the affected side while countering the turn with the opposite brake and weight shift. It also helps sometimes to pull Big Ears to release the tension on the affected lines.

FRONT STALL OR SYMMETRIC COLLAPSE

In the event of a front stall the glider will normally re-inflate on its own immediately. To speed up re-inflation briefly apply 30%–40% brake. Do not hold the brakes down permanently to avoid an unwanted stall.

B-STALL

The VIVA has a very clean, stable B-stall. To enter, pull the first 20 cm slowly until the glider loses forward speed and starts to descend vertically. Then pull more until a stable 7–9 m/s descent rate is attained. To exit, release slowly until the glider has regained its shape and then the last 15 cm fast to prevent deep stall. The B-stall is a safe, controlled way of losing altitude fast without any forward speed.

BIG EARS

Altitude can be lost in a controlled way by collapsing both tips. Take the outermost A-line (A5, on its own riser) on both sides and pull them down until the tips collapse. This should close about 30% of the wing in total. Steering is possible with weight shift. To increase the sink rate the pilot can push the speed system after the tips have collapsed – this can give up to about 7 m/s sink rate with about 40 km/h forward speed. To exit, release the speed system and then release the tip A-lines.



CAUTION:
DO NOT ATTEMPT ANY EXTREME MANOEUVRES WITH THE TIPS COLLAPSED AS THIS DOUBLES THE LOAD ON THE CENTRE LINES AND ATTACHMENT POINTS, WHICH COULD LEAD TO LINE FAILURE.

DEEP STALL / PARACHUTAL STALL

Signs: very little or no forward airspeed; cells bulging in on bottom surface; slow turning sensation; increased vertical descent.

Exit: Pull all the A-risers down to get the wing flying again. The moment the wing starts to fly the pilot should release the A-risers, or the wing might suffer a frontal collapse. Alternatively push the speed bar to lower the angle of attack. Pulling one or both brakes while in deep stall can accidentally enter a full stall or spin (not recommended).

SPIRAL DIVES

The VIVA has very good behaviour in spiral and has no tendency to stick. By progressively applying brake on one side the glider can be put into a spiral dive. The spiral has to be exited slowly by releasing the brake over one complete turn.

**CAUTION:**

SOME GLIDERS CAN BE NEUTRAL IN SPIRAL AND MAY NOT EXIT WITHOUT PILOT INPUT. PILOTS CAN SUFFER BLACK-OUTS IN SPIRALS AND MUST EXIT AS SOON AS ANY ABNORMAL SYMPTOMS ARE FELT.

Sink rates in excess of 19 m/s can be obtained. Ensure enough height to exit safely.

STRONG TURBULENCE

NEVER FLY IN STRONG TURBULENCE! If you unexpectedly encounter strong turbulence, fly with about 20% brake applied to increase the internal pressure and the angle of attack of the canopy and land as soon as possible.

STEERING NOT FUNCTIONING

If the pilot cannot reach the brake or steering lines for any reason, the pilot can control the glider by pulling down on the rear risers. Care must be taken as much less input is needed to turn the wing.

IF YOU PULL TOO MUCH ON ONE OR BOTH RISERS THE GLIDER WILL SPIN OR STALL.



PARAMOTOR VERSION AND PARAMOTORING WITH YOUR VIVA

The paramotor version is equipped with trims on the risers. With the Trims in the closed position the paramotor version conforms to the EN certification. The trim position should be in the closed position for take-off, landing and flight close to the ground or in turbulent conditions. The trims are useful for cruising over longer distances, and for making minor direction adjustments to compensate for torque. It is not recommended to use the trims combined with the speed bar.

18. LANDING

- Always land into the wind.
- At a height of about 50 metres your landing setup should begin. Head into the wind and, depending on the wind strength, reach the landing point by making S-turns.
- At a height of about 15 metres make the final descent at trim speed into the wind.
- At a height between half a metre and one metre gently flare the glider by pulling gradually down on the brakes to the stall point. When top-landing it is sometimes not necessary to flare, or a much smaller flare may be required, especially in strong ridge conditions.

TREE LANDING

If it is not possible to land in an open area, steer into the wind towards an unobstructed tree and do a normal landing approach as if the tree is your landing spot. Flare as for a normal landing. On impact hold your legs together and protect your face with your arms. After any tree landing it is very important to check all lines, line measurements, and the canopy for damage.



WATER LANDING

Release all the buckles of the harness except for one leg. Just before landing, release the remaining buckle. Let the canopy rotate completely forward until it hits the water with the leading edge openings; the air inside will then be trapped, forming a big air mattress and giving the pilot more time to escape. Get away from the glider and lines as soon as possible, to avoid entanglement.

LANDING IN TURBULENCE

One of the safest ways to land a glider in turbulent conditions is to use Big Ears. This reduces the chances of getting a collapse while on final approach. Use weight shift to control your approach. Practice this in normal conditions before you need it in an emergency.

19. PACKING

Spread the canopy completely out on the ground. Separate the lines to the left and the right side of the glider. If the risers are removed from the harness, join the two risers together by passing one carabiner loop through the other. This keeps them neatly together and helps to stop line tangles.

Fold the canopy alternately from the right and left sides, working towards the centre; press out the air, working from the rear towards the front. Place the risers at the trailing edge of the folded canopy and use them to finally roll up the canopy.



20. MAINTENANCE & CLEANING

Cleaning should be carried out with water and if necessary, gentle soap. If the glider comes in contact with salt water, clean thoroughly with fresh water. Do not use solvents of any kind, as this may remove the protective coatings and destroy the fabric.

21. BUTT HOLE II (Auto Debris Release Valves)



Your VIVA is equipped with Butt-hole II, which automatically clears smaller particles such as sand, grass and stones from the wing.





22. STORAGE

When the glider is not in use, it should be stored in a cool, dry place. A wet glider should first be dried (out of direct sunlight). Protect the glider against sunlight (UV radiation). When on the hill keep the glider covered or in the bag. Never store or transport the glider near paint, petrol or any other chemicals.

Do not leave your paraglider in the trunk of a car or exposed to the sun.

Temperatures on a hot summer's day in a closed environment (car, etc.) can easily reach over 60°C.

At these temperatures Nylon permanently changes its characteristics which may alter the behaviour and shape of the wing, rendering it non-airworthy. APCO's warranty will not be applicable.

23. DAMAGE

Using spinnaker repair tape (for non-siliconised cloth) can repair tears in the sail (up to 5 cm). A professional repairer should repair greater damage, or damage at structurally important points such as line attachment points, tension tapes etc.



24. GENERAL ADVICE

A qualified person or agent of the company should check the glider every year. Never make changes to the canopy or the lines. Changes can introduce dangerous flying characteristics and will not improve flying performance.

Paragliding and Paramotor flying should always be done in a way that has minimum impact on wildlife and the environment. Respect access regulations and the wishes and rights of landowners.

If you have any doubts about flying conditions – do not begin. If you have any questions, please contact your dealer or us.

Lastly, be equipped with a certified emergency parachute and helmet on every flight.

25. RECYCLING

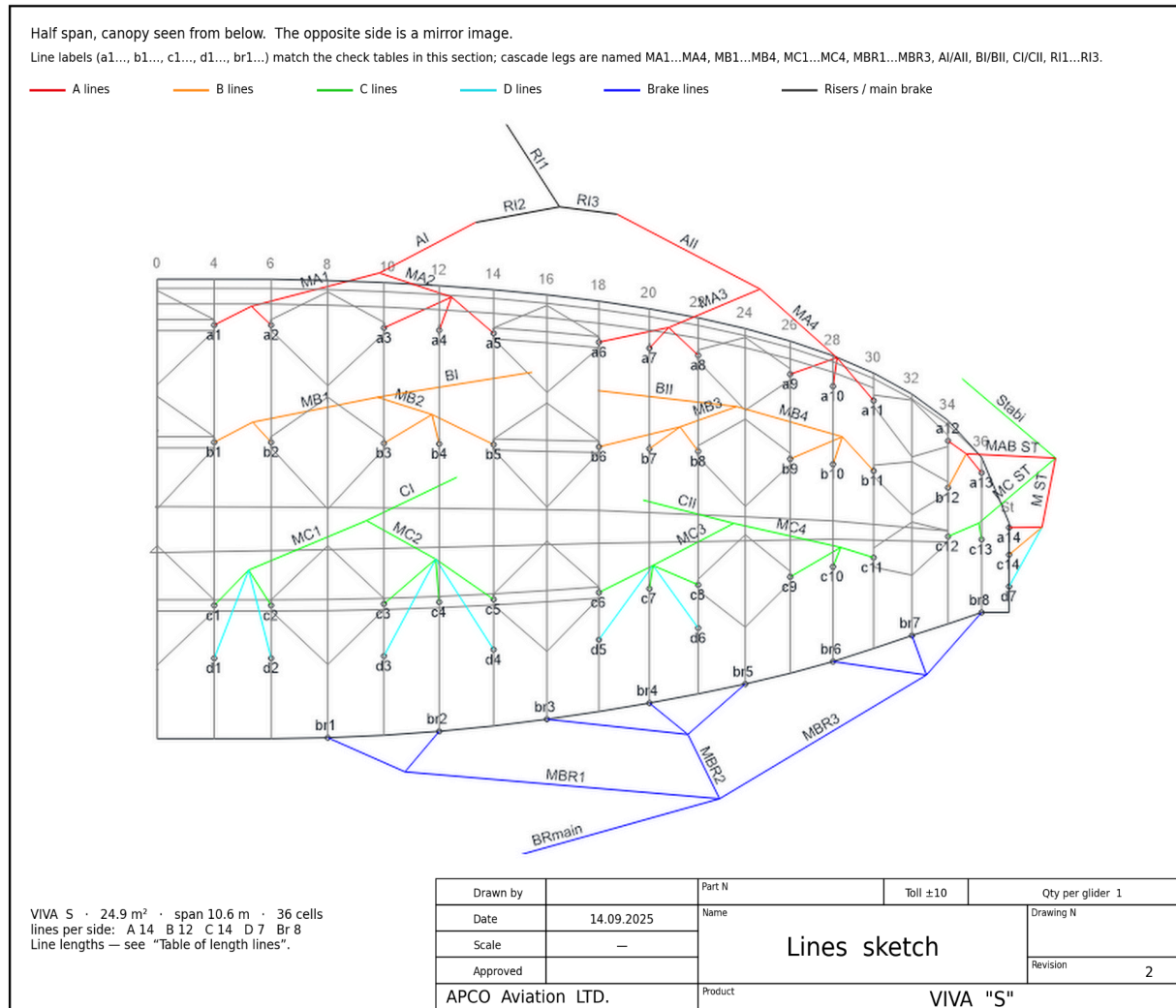
If you need to dispose of the wing, do so in an environmentally responsible manner. Recycling of many parts of the wing is possible. There are some organisations that manufacture reusable shopping bags, windsocks, backpacks and more using old donated wings. Search the web, or contact The Cloudbase Foundation for more information. Do not dispose of a retired wing with normal household waste.

26. VIVA LINE SKETCHES

Line sketches – half-span line map of each size, drawn to the APCO standard drawing frame. Every line carries the same label as in the check tables of Section 27; the opposite side of the canopy is a mirror image. Source: production line maps, rev.2 · 14.9.2025.

VIVA – SIZE S (24.9 m² | Span 10.6 m | AR 4.8)

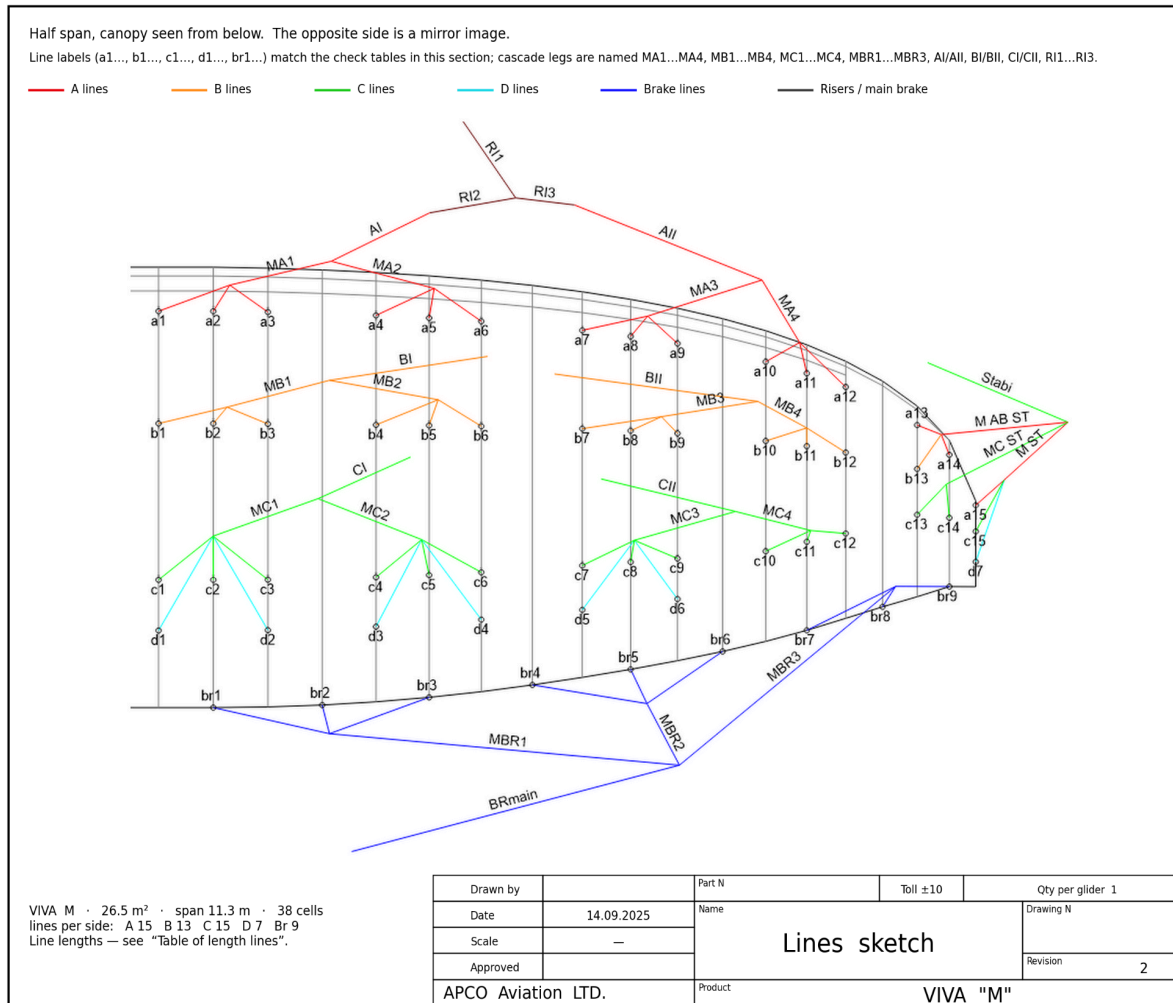




VIVA "S" — lines sketch, half span (line map rev.2 · 14.9.2025). 24.9 m² · span 10.6 m · 36 cells · lines per side a 1–14 · b 1–12 · c 1–14 · d 1–7 · br 1–8.



VIVA – SIZE M (26.5 m² | Span 11.3 m | AR 4.8)



VIVA "M" — lines sketch, half span (line map rev.2 · 14.9.2025). 26.5 m² · span 11.3 m · 38 cells · lines per side a 1–15 · b 1–13 · c 1–15 · d 1–7 · br 1–9.

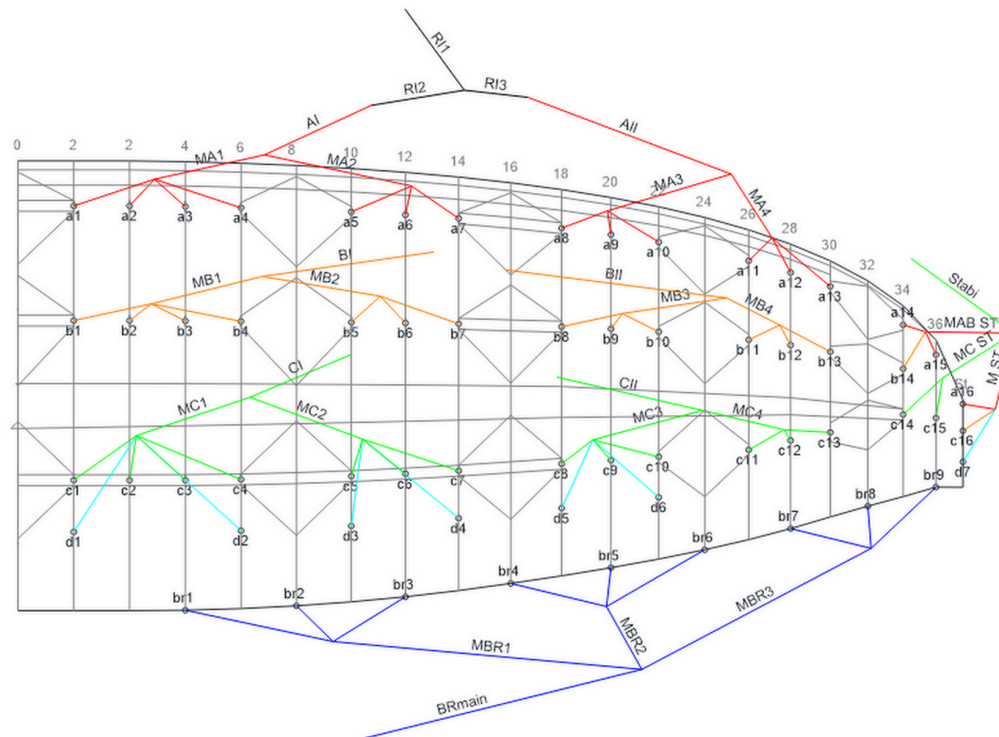


VIVA – SIZE L (28.25 m² | Span 12.0 m | AR 4.8)

Half span, canopy seen from below. The opposite side is a mirror image.

Line labels (a1..., b1..., c1..., d1..., br1...) match the check tables in this section; cascade legs are named MA1...MA4, MB1...MB4, MC1...MC4, MBR1...MBR3, AI/AII, BI/BII, CI/CII, RI1...RI3.

— A lines — B lines — C lines — D lines — Brake lines — Risers / main brake



VIVA L · 28.25 m² · span 12.0 m · 40 cells
lines per side: A 16 B 14 C 16 D 7 Br 9
Line lengths — see "Table of length lines".

Drawn by		Part N	Toll ±10	Qty per glider 1
Date	14.09.2025	Name	Lines sketch	
Scale	—			
Approved				
APCO Aviation LTD.		Product	VIVA "L"	
				Drawing N
				Revision 2

VIVA "L" — lines sketch, half span (line map rev.2 · 14.9.2025). 28.25 m² · span 12.0 m · 40 cells · lines per side a 1–16 · b 1–14 · c 1–16 · d 1–7 · br 1–9.



27. VIVA OVERALL LINE LENGTH TABLES

Two forms are given for every size. The Table of length lines is the APCO standard cascade drawing – it shows how each line is built up from the riser outwards. The check tables that follow list the same lines as plain totals, for the periodical line-length inspection. All measurements in mm; Stukpruf EN-A v1.3, 2 November 2025.

SIZE S – TABLE OF LENGTH LINES



Rib	02	04	06	08	10	12	14	16	18	20	22	24	26	28	30	32	34	St	Riser
A	a1 1180	a2 1140		a3 1150	a4 1130	a5 1190		a6 1070	a7 1000	a8 1010		a9 860	a10 810	a11 810		a12 510	a13 360	a14 560	530
	MA1 2060			MA2 2045				MA3 1945				MA4 2025				M AB ST 790		M ST 555	
	AI 2600							AII 2800							ST 4115				
B	b1 1190	b2 1140		b3 1140	b4 1130	b5 1200		b6 1060	b7 1010	b8 1010		b9 850	b10 810	b11 820		b12 450			530
	MB1 1977			MB2 1962				MB3 1872				MB4 1982				M AB ST 790			
	BI 2600							BII 2800							ST 4115				
C	c1 1190	c2 1140		c3 1140	c4 1120	c5 1190		c6 1070	c7 1000	c8 1000		c9 860	c10 800	c11 810		c12 370	c13 290	c14 580	530
	MC1 2130			MC2 2110				MC3 1987				MC4 2062				MC ST 900		M ST 555	
	CI 2600							CII 2800							ST 4115				
D	d1 1280	d2 1240		d3 1240		d4 1270		d5 1160		d6 1060								d7 660	530
	MC1 2130			MC2 2110				MC3 1987										M ST 555	
	CI 2600							CII 2800										ST 4115	
Br			br1 908		br2 763		br3 1324		br4 1148		br5 1209		br6 1087		br7 1002		br8 1059		I
			MBR1 3200				MBR2 2500				MBR3 2500								
	BRmain 2465																		

* All measurements are in mm. Column = the rib the line is attached to — rib numbering of the cutting drawing (02, 04, ...). St = stabilizer rib (rib 36).

A crossed cell means the group has no line on that rib. Rib 00 (centre) carries no lines and is not listed.

Every MID cell carries the cascade-leg name with its length — MA/MB/MC, MAB ST, MC ST, M ST, MBR1-3, AI/AII, BI/BII, CI/CII, ST, BRmain — the names of the Materials list.

Top row: line name over its length. Where a MID pair does not fit the cell width it is set on two lines; the length is always the last line of the cell.

Each group is read bottom-up: MID 2 (lower cascade, from the riser) → MID 1 → TOP.

C and D rows share cascade legs — a shared MID leg is listed in both rows and is fitted once. Riser (lower line) = 530 mm on A, B, C, D. Brakes have no riser contribution.

MATERIALS

a1–a9, b1–b7	Dyneema	1.1	CTL910130
a10–a14, MA4, M AB ST, M ST, b8–b12, MB4, c1–c14, MC3, MC4	Aramid	1.2	CTL900120
MC ST, d1–d7, br1–br8, MBR1, MBR2, MBR3, ST			
MA3, MB3, MC1, MC2, CII	Aramid	1.5	CTL900160
MA1, MA2, MB1, MB2, CI	Aramid	1.8	CTL900230
AII, BII	Aramid	1.9	CTL900320
BRmain	Dyneema	2	CTL9101900003
AI, BI	Aramid	2.1	CTL 900360

Drawn by		Part N		Toll ±5	Qty per glider 1
Date	02.11.2025	Name	Table of length lines		
Scale	—				
Approved					
APCO Aviation LTD.		Product	VIVA "S"		





VIVA “S” – table of length lines (cascade form). Read each group bottom-up: MID 2 → MID 1 → TOP.

Check tables – VIVA “S”, overall line lengths [mm]

Riser (lower line) = 530 mm for all A, B, C, D risers. Brake lines have no riser contribution.

Rib	Top	Mid1	Mid2	Riser	Total
A1	1180	2060	2600	530	6370
A2	1140	2060	2600	530	6330
A3	1145	2045	2600	530	6320
A4	1130	2045	2600	530	6305
A5	1190	2045	2600	530	6365
A6	1070	1945	2800	530	6345
A7	1000	1945	2800	530	6275
A8	1010	1945	2800	530	6285
A9	860	2025	2800	530	6215
A10	810	2025	2800	530	6165
A11	810	2025	2800	530	6165
A12	510	790	4115	530	5945
A13	360	790	4115	530	5795
A14	560	555	4115	530	5760



Rib	Top	Mid1	Mid2	Riser	Total
B12	450	790	4115	530	5885
B11	820	1980	2800	530	6130
B10	810	1980	2800	530	6120
B9	850	1980	2800	530	6160
B8	1000	1880	2800	530	6210
B7	1000	1880	2800	530	6210
B6	1055	1880	2800	530	6265
B5	1190	1965	2600	530	6285
B4	1130	1965	2600	530	6225
B3	1140	1965	2600	530	6235
B2	1140	1977	2600	530	6247
B1	1190	1977	2600	530	6297



Rib	Top	Mid1	Mid2	Riser	Total
C14	580	555	4115	530	5780
C13	290	900	4115	530	5835
C12	370	900	4115	530	5915
C11	810	2062	2800	530	6202
C10	800	2062	2800	530	6192
C9	860	2062	2800	530	6252
C8	1000	1987	2800	530	6317
C7	1000	1987	2800	530	6317
C6	1070	1987	2800	530	6387
C5	1185	2100	2600	530	6415
C4	1120	2100	2600	530	6350
C3	1140	2100	2600	530	6370
C2	1140	2130	2600	530	6400
C1	1190	2130	2600	530	6450

Rib	Top	Mid1	Mid2	Riser	Total
D7	660	555	4115	530	5860
D6	1060	1987	2800	530	6377
D5	1160	1987	2800	530	6477
D4	1270	2100	2600	530	6500
D3	1240	2100	2600	530	6470
D2	1240	2130	2600	530	6500
D1	1280	2130	2600	530	6540



Rib	02	04	06	08	10	12	14	16	18	20	22	24	26	28	30	32	34	36	St	Riser
A	a1 1200	a2 1120	a3 1130		a4 1140	a5 1130	a6 1200		a7 1070	a8 1000	a9 1000		a10 850	a11 800	a12 800		a13 510	a14 370	a15 560	530
	MA1 2505				MA2 2480				MA3 1970				MA4 2040				M AB ST 790		M ST 555	
	AI 2600								AII 3200								ST 4500			
B	b1 1200	b2 1120	b3 1130		b4 1140	b5 1130	b6 1200		b7 1070	b8 1000	b9 1000		b10 850	b11 800	b12 810		b13 450			530
	MB1 2425				MB2 2400				MB3 1900				MB4 1990				M AB ST 790			
	BI 2600								BII 3200								ST 4500			
C	c1 1200	c2 1120	c3 1130		c4 1140	c5 1130	c6 1190		c7 1070	c8 1000	c9 990		c10 850	c11 790	c12 790		c13 370	c14 290	c15 580	530
	MC1 2575				MC2 2540				MC3 2005				MC4 2075				MC ST 900		M ST 555	
	CI 2600								CII 3200								ST 4500			
D	d1 1290		d2 1220		d3 1240		d4 1270		d5 1150		d6 1060								d7 660	530
	MC1 2575				MC2 2540				MC3 2005										M ST 555	
	CI 2600								CII 3200											
Br		br1 1750		br2 1470		br3 1460		br4 1290		br5 1120		br6 1187		br7 1045		br8 940		br9 995		I
		MBR1 3000						MBR2 3000						MBR3 3000						
		BRmain 2400																		

* All measurements are in mm. Column = the rib the line is attached to — rib numbering of the cutting drawing (02, 04, ...), St = stabilizer rib (rib 38).

A crossed cell means the group has no line on that rib. Rib 00 (centre) carries no lines and is not listed.

Every MID cell carries the cascade-leg name with its length — MA/MB/MC, MAB ST, MC ST, M ST, MBR1-3, AI/AII, BI/BII, CI/CII, ST, BRmain — the names of the Materials list.

Top row: line name over its length. Where a MID pair does not fit the cell width it is set on two lines; the length is always the last line of the cell.

Each group is read bottom-up: MID 2 (lower cascade, from the riser) → MID 1 → TOP.

C and D rows share cascade legs — a shared MID leg is listed in both rows and is fitted once. Riser (lower line) = 530 mm on A, B, C, D. Brakes have no riser contribution.

MATERIALS

a1–a9, b1–b7

Dyneema 1.1 CTL910130

a10–a15, MA4, M AB ST, M ST, b8–b13, MB4, c1–c15, MC3, MC4

Aramid 1.2 CTL900120

MC ST, d1–d7, br1–br9, MBR1, MBR2, MBR3, ST

MA3, MB3, MC1, MC2, CII

Aramid 1.5 CTL900160

MA1, MA2, MB1, MB2, CI

Aramid 1.8 CTL900230

AI1, BI1

Aramid 1.9 CTL900320

BRmain

Dyneema 2 CTL9101900003

AI, BI

Aramid 2.1 CTL 900360

Drawn by		Part N	Toll ±5	Qty per glider 1
Date	02.11.2025	Name	Drawing N	
Scale	—	Table of length lines		
Approved				
APCO Aviation LTD.		Product	VIVA "M"	





Check tables — VIVA “M”, overall line lengths [mm]

Rib	Top	Mid1	Mid2	Riser	Total
A1	1200	2505	2600	530	6835
A2	1120	2505	2600	530	6755
A3	1130	2505	2600	530	6765
A4	1140	2480	2600	530	6750
A5	1130	2480	2600	530	6740
A6	1200	2480	2600	530	6810
A7	1070	1970	3200	530	6770
A8	1000	1970	3200	530	6700
A9	1000	1970	3200	530	6700
A10	850	2040	3200	530	6620
A11	800	2040	3200	530	6570
A12	800	2040	3200	530	6570
A13	510	790	4500	530	6330
A14	370	790	4500	530	6190
A15	560	555	4500	530	6145



Rib	Top	Mid1	Mid2	Riser	Total
B13	450	790	4500	530	6270
B12	800	2000	3200	530	6530
B11	800	2000	3200	530	6530
B10	840	2000	3200	530	6570
B9	1000	1905	3200	530	6635
B8	1000	1905	3200	530	6635
B7	1070	1905	3200	530	6705
B6	1200	2400	2600	530	6730
B5	1130	2400	2600	530	6660
B4	1140	2400	2600	530	6670
B3	1130	2425	2600	530	6685
B2	1120	2425	2600	530	6675
B1	1200	2425	2600	530	6755



Rib	Top	Mid1	Mid2	Riser	Total
C15	580	555	4500	530	6165
C14	290	900	4500	530	6220
C13	370	900	4500	530	6300
C12	800	2070	3200	530	6600
C11	800	2070	3200	530	6600
C10	850	2070	3200	530	6650
C9	990	2005	3200	530	6725
C8	1000	2005	3200	530	6735
C7	1070	2005	3200	530	6805
C6	1190	2540	2600	530	6860
C5	1130	2540	2600	530	6800
C4	1140	2540	2600	530	6810
C3	1130	2575	2600	530	6835
C2	1120	2575	2600	530	6825
C1	1200	2575	2600	530	6905



Rib	Top	Mid1	Mid2	Riser	Total
D7	660	555	4500	530	6245
D6	1060	2005	3200	530	6795
D5	1150	2005	3200	530	6885
D4	1270	2540	2600	530	6940
D3	1240	2540	2600	530	6910
D2	1220	2575	2600	530	6925
D1	1290	2575	2600	530	6995



Brake	Top	Mid1	Mid2	—	Total
Br1	1750	3000	2400	—	7150
Br2	1470	3000	2400	—	6870
Br3	1460	3000	2400	—	6860
Br4	1290	3000	2400	—	6690
Br5	1120	3000	2400	—	6520
Br6	1187	3000	2400	—	6587
Br7	1045	3000	2400	—	6445
Br8	940	3000	2400	—	6340
Br9	995	3000	2400	—	6395

SIZE L — TABLE OF LENGTH LINES



Rib	02	04	06	08	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	St	Riser			
A	a1 1880	a2 1800	a3 1770	a4 1790		a5 1140	a6 1130	a7 1200		a8 1080	a9 1000	a10 990		a11 860	a12 800	a13 790		a14 510	a15 370	a16 560	530			
	MA1 2270					MA2 2920					MA3 1990					MA4 2040						M AB ST 790		M ST 560
	AI 2600									AII 3600									ST 4880					
B	b1 1880	b2 1800	b3 1770	b4 1790		b5 1140	b6 1130	b7 1200		b8 1070	b9 1000	b10 1000		b11 850	b12 800	b13 810		b14 460			530			
	MB1 2190					MB2 2840					MB3 1930					MB4 2000						M AB ST 790		
	BI 2600									BII 3600									ST 4880					
C	c1 1880	c2 1800	c3 1770	c4 1790		c5 1140	c6 1130	c7 1200		c8 1080	c9 1000	c10 990		c11 860	c12 800	c13 800		c14 380	c15 300	c16 580	530			
	MC1 2330					MC2 2970					MC3 2030					MC4 2070						MC ST 900		M ST 560
	CI 2600									CII 3600									ST 4880					
D	d1 1970			d2 1880		d3 1230		d4 1270		d5 1150		d6 1050								d7 660	530			
	MC1 2330					MC2 2970					MC3 2030											M ST 560		
	CI 2600									CII 3600														ST 4880
Br				br1 1720		br2 1440		br3 1430		br4 1260		br5 1090		br6 1170		br7 1010		br8 920		br9 990		I		
				MBR1 2970					MBR2 2990					MBR3 3020										
	BRmain 2850																							

* All measurements are in mm. Column = the rib the line is attached to — rib numbering of the cutting drawing (02, 04, ...), St = stabilizer rib (rib 40).

A crossed cell means the group has no line on that rib. Rib 00 (centre) carries no lines and is not listed.

Every MID cell carries the cascade-leg name with its length — MA/MB/MC, MAB ST, MC ST, M ST, MBR1-3, AI/AII, BI/BII, CI/CII, ST, BRmain — the names of the Materials list.

Top row: line name over its length. Where a MID pair does not fit the cell width it is set on two lines; the length is always the last line of the cell.

Each group is read bottom-up: MID 2 (lower cascade, from the riser) → MID 1 → TOP.

C and D rows share cascade legs — a shared MID leg is listed in both rows and is fitted once. Riser (lower line) = 530 mm on A, B, C, D. Brakes have no riser contribution.

MATERIALS

b14, c16	None	None
a1-a9, b1-b7	Dyneema	1.1 CTL910130
a10-a16, MA4, M AB ST, M ST, b8-b13, MB4, c1-c15, MC3, MC4	Aramid	1.2 CTL900120
MC ST, d1-d7, br1-br9, MBR1, MBR2, MBR3, ST		
MA3, MB3, MC1, MC2, CII	Aramid	1.5 CTL900160
MA1, MA2, MB1, MB2	Aramid	1.8 CTL900230
AII, BII, CI	Aramid	1.9 CTL900320
BRmain	Dyneema	2 CTL910190003
AI, BI	Aramid	2.1 CTL 900360

Drawn by		Part N	Toll ±5	Qty per glider 1
Date	02.11.2025	Name	Table of length lines	
Scale	—	Drawing N		
Approved		Revision	1.5	
APCO Aviation LTD.		Product	VIVA "L"	





VIVA “L” — table of length lines (cascade form). Read each group bottom-up: MID 2 → MID 1 → TOP.

Check tables — VIVA “L”, overall line lengths [mm]

Rib	Top	Mid1	Mid2	Riser	Total
A1	1880	2270	2600	530	7280
A2	1800	2270	2600	530	7200
A3	1770	2270	2600	530	7170
A4	1790	2270	2600	530	7190
A5	1140	2920	2600	530	7190
A6	1130	2920	2600	530	7180
A7	1200	2920	2600	530	7250
A8	1080	1990	3600	530	7200
A9	1000	1990	3600	530	7120
A10	990	1990	3600	530	7110
A11	860	2040	3600	530	7030
A12	800	2040	3600	530	6970
A13	790	2040	3600	530	6960
A14	510	790	4880	530	6710
A15	370	790	4880	530	6570
A16	560	555	4880	530	6525



Rib	Top	Mid1	Mid2	Riser	Total
B14	460	790	4880	530	6660
B13	810	2000	3600	530	6940
B12	800	2000	3600	530	6930
B11	850	2000	3600	530	6980
B10	1000	1930	3600	530	7060
B9	1000	1930	3600	530	7060
B8	1070	1930	3600	530	7130
B7	1200	2840	2600	530	7170
B6	1130	2840	2600	530	7100
B5	1140	2840	2600	530	7110
B4	1790	2190	2600	530	7110
B3	1770	2190	2600	530	7090
B2	1800	2190	2600	530	7120
B1	1880	2190	2600	530	7200



Rib	Top	Mid1	Mid2	Riser	Total
C16	580	555	4880	530	6545
C15	300	900	4880	530	6610
C14	380	900	4880	530	6690
C13	800	2070	3600	530	7000
C12	800	2070	3600	530	7000
C11	860	2070	3600	530	7060
C10	990	2030	3600	530	7150
C9	1000	2030	3600	530	7160
C8	1080	2030	3600	530	7240
C7	1200	2970	2600	530	7300
C6	1130	2970	2600	530	7230
C5	1140	2970	2600	530	7240
C4	1790	2330	2600	530	7250
C3	1770	2330	2600	530	7230
C2	1800	2330	2600	530	7260
C1	1880	2330	2600	530	7340



Rib	Top	Mid1	Mid2	Riser	Total
D7	660	555	4880	530	6625
D6	1050	2030	3600	530	7210
D5	1150	2030	3600	530	7310
D4	1270	2970	2600	530	7370
D3	1230	2970	2600	530	7330
D2	1880	2330	2600	530	7340
D1	1970	2330	2600	530	7430

Brake	Top	Mid1	Mid2	—	Total
Br1	1690	3000	2850	—	7540
Br2	1410	3000	2850	—	7260
Br3	1410	3000	2850	—	7260
Br4	1250	3000	2850	—	7100
Br5	1080	3000	2850	—	6930
Br6	1160	3000	2850	—	7010
Br7	1030	3000	2850	—	6880
Br8	940	3000	2850	—	6790
Br9	1000	3000	2850	—	6850



APCO wishes you many hours of enjoyable flying!
Take Air!

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