

TOPLESS OWNER'S MANUAL

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LA MOUETTE GLIDERS

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DESCRIPTION OF DESIGN

The LA MOUETTE TOPLESS combines the successful design philosophy of the COBRA and RACER series with materials of the future. Utilising carbon fibre and a unique internal reflex system, so eliminating top rigging.

The TOPLESS has been developed to meet the demand for improved performance in combination with lighter bar pressure in both roll and pitch. This has been achieved without sacrificing the traditional LA MOUETTE qualities of stability, structural integrity and sleek finish.

The elliptical shape and thinner profile created by the fibre glass tips reduce wing tip vortices, whilst the weight saving results in a lower moment of inertia, thus reducing roll pressures.

With a combination of carbon fibre reflex struts and washout rods the new LA MOUETTE TOPLESS displays excellent pitch stability and dive recovery.

The overall finish and unique structure of the LA MOUETTE TOPLESS is the usual high quality.

By eliminating top rigging LA MOUETTE has achieved noticeable improvements in glide, speed at glide and sink rate.

SPECIFICATIONS

MODEL/SIZE	TOPLESS 12.8m	TOPLESS 13.5m
Sail area	12.8 m / 142 sq ft	13.5 m / 150 sq ft
Wing span	10.2 m / 33.3 ft	10.2 m / 33.3 ft
Nose angle	132 degrees	132 degrees
Aspect ratio	8	7.6
Weight	32 kg	33 kg
recommended pilot	50 - 75 kg	60 - 95 kg
Weight (naked)	110 - 165 lbs	132 - 190 lbs
Weight (clip in)	55 - 95 kg	65 - 110 kg
Packed length	5.05 m / 16.7 ft	5.05 m / 16.7 ft
Breakdown length	4.15 m / 13.8 ft	4.15 m / 13.8 ft
Battens	24	24
Keel and L/E material	7075 aluminium	7075 aluminium
Crossbar and battens	carbon fibre	carbon fibre
Floating tips per side	2	2
VNE	60 mph	60 mph
VA	50 mph	50 mph
Trim speed	21 mph	21 mph
Max. speed	65 mph	65 mph

OPERATING LIMITATIONS

Your LA MOUETTE TOPLESS is a sophisticated « state of the art » high performance hang glider and if maintained correctly will give you years of safe flying. However, it is important that you display a healthy respect for all aspects of aviation and avoid flying in dangerous conditions or outside the gliders operating limits.

Flight operations should be limited to none-aerobatic maneuvers where the pitch does not exceed 30 degrees up or down to the horizon, or bank angles exceeding 60 degrees.

The La Mouette TOPLESS has been designed for foot launching and should not be flown by more than one person at a time and should not be flown backwards or inverted.

The recommend pilot rating is PILOT.

The La Mouette TOPLESS should not be flown with auxiliary power unless specific approval has been given by La Mouette. The La Mouette TOPLESS should not be flown in excess of the VNE

VNE = Velocity Never to Exceed

La Mouette TOPLESS 147 VNE = 60 mph

Stall speed with maximum pilot weight	30 km/h
Stall speed with minimum pilot weight	27 km/h
The maximum speed with the minimum pilot weight	95 km/h

The TOPLESS will resist spinning and will recover quickly if control pressures are relaxed. Recovery from a stalled turn can be achieved without extreme height loss or without extreme altitude change if the angle is reduced. Recovery from an incipient spin is achieved if this procedure is followed.

LOAD TEST

The La Mouette TOPLESS has had ultimate load tests at

- ◇ maximum lift angle of attack at 70 mph
- ◇ 30 degrees negative angle of attack at 60 mph

PITCH STABILITY

The TOPLESS has been tested through a broad range of angles of attack and air speeds. i.e; 0 degrees to plus 15 degrees and to minus 15 degrees, with speed ranges of 20, 25, 30, 35, 40, 45, 50, 55, 60 mph in zero and positive angles of attack, and 20, 25, 30, 35, 40, 45, 50 mph at negative angles of attack.

NOTE

This glider has been tested at all the above with the VB off, half on and full on and has achieved excellent results in all aspects.

RIGGING THE TOPLESS

RIGGING ON THE FRAME

1. Open the bag and remove the velcro straps
2. Assemble and lock the base bar
3. Lift the nose and roll the glider over on to the control bar
4. Open the leading edges as wide as you can (the central washout strut may restrain the sail)
5. Insert the upper surface battens numbered 1-6 and the loose carbon fibre batten, starting at the root (or nose), plus fit the tip rod and secure with the batten elastics.
6. Tension the glider, pull the string attached to the rear of the keel to pull back the cross bar strap, if it does not come out at all, the pulleys of the VB might be caught up in the keel pocket, open the double surface and straighten them. If the pulleys are correctly set and the strap still doesn't come out it means that the leading edges are not opened enough. Go and open them as far as you can. In windy conditions open cross wind. A tail wind would increase a lot the tension to apply on the cross bar tension.
7. As the cross bar is not carried by the king post it holds its weight and the sail weight on the keel and the friction is strong enough to keep the leading edges opened. Go back to the keel and hook in the stainless steel ring into the aluminium mushroom head.
8. Locate the conical fibre glass tip in the end of the leading edge, through the velcro opening of the sail. It must be pushed in until it reaches the end stop. You will feel or hear a small impact noise to confirm it is fully located.
9. Tension the fibre glass tip by sliding the tensioner over the tip, **bending** the tip backward and inward with one hand the other hand stretching the sail out. Let the pin of the sail slide in the tensioner slot. Then rotate the tensioner inside the sail until it locks itself. Close the velcro. No effort is needed for this operation.
10. Insert the last three battens in their pockets and secure with the batten elastic.
11. Slide in the undersurface battens
12. Fit the nose cone of the glider with its velcro's as tightly as possible

RIGGING FLAT ON THE GROUND

1. Open the bag and remove the velcro straps
2. Assemble and lock the base bar
3. Rotate the glider to lay on the « A » frame
4. Open the leading edges as wide as you can (the central washout strut may restrain the sail)
5. Insert the upper surface battens numbered 1-6 and the loose carbon fibre batten, starting at the root (or nose), plus fit the tip rod and secure with the batten elastics.

6. Tension the glider, pull the string attached to the rear of the keel to pull back the cross bar strap, if it does not come out at all, the pulleys of the VB might be caught up in the keel pocket, open the double surface and straighten them. If the pulleys are correctly set and the strap still doesn't come out it means that the leading edges are not opened enough. Go and open them as far as you can. As the cross bar is not carried by the king post it holds its weight and the sail weight on the keel and the friction is strong enough to keep the leading edges opened. Go back to the keel and hook in the stainless steel ring into the aluminium mushroom head.
7. Locate the conical fibre glass tip in the end of the leading edge, through the velcro opening of the sail. It must be pushed in until it reaches the end stop. You will feel or hear a small impact noise to confirm it is fully located.
8. Tension the fibre glass tip by sliding the tensioner over the tip, bending the tip backward with one hand the other hand stretching the sail out. Let the pin of the sail slide in the tensioner slot. Then rotate the tensioner inside the sail until it locks itself. Close the velcro.
9. Insert the last three battens in their pockets and secure with the batten elastic.
10. Slide in the undersurface battens
11. Lift up the nose of the glider and attach the front cables to the nose
12. Fit the nose cone with its velcro's as tightly as possible

PRE-FLIGHT CHECKS

1. Rig the glider as normal
2. Ensure that all battens are correctly located
3. Ensure both fibre tip struts are pushed fully home into the leading edge and have been correctly tensioned
4. Check the large carbon reflex strut is sitting on the crossbar at the correct position i.e. on the wooden crossbar spacer and is under the large carbon batten and against the velcro strap inside the sail
5. Ensure the tip strut is properly located and under the appropriate batten.
6. Make sure all wing zips and velcro's are closed
7. Open the main sail zip and inspect the airframe inside of the sail checking for any damage or wear. Close the zip after inspection.
8. Inspect all base bar fittings and sidewire junctions.
9. Check that the glider looks symmetrical.

10. Hang check your harness.

DE-RIGGING THE TOPLESS

FLAT ON THE GROUND

1. Remove the outer three battens.
2. De-tension and remove fibre tip strut. No strength is needed. Remember to push the sail away from the fibre tip perpendicular, not tensioning.
3. De-tension the glider
4. Remove all battens except the two n°1 battens and the nose batten
5. Pull the leading edges in towards the keel leaving a 20-30cm gap between them to stop sail damage by trapping it between the leading edges and the keel.
6. Pull the sail over the leading edges, put the extra length of the upper surface over the mylar pocket, roll the sail after having folded the sail tip, roll the sail tip around the leading edge, slide the sail and leading edge tip in its pocket, repeat for the other side.
7. Push the back of the keel down under the leading edge and hold it down with a velcro passing over the keel and under the leading edges. Tight the velcro around the glider so that neither the leading edge nor the cross bar squeeze the top of the A-frame.
8. Tie the other velcro's around the glider trying to make as round a package as possible avoiding sharp angles in the mylar.
9. Cover the glider with its bag and lay it on the ground
10. Disassemble the A-frame and fold inside sail
11. Ensure all protective padding is in place. Zip up the bag.

ON THE A-FRAME

1. Remove the outer three battens
2. De-tension and remove fibre tip strut
3. De-tension the glider
4. Detach nose cables
5. Remove all battens except the two n°1 battens and the nose batten
6. Pull the leading edges in towards the keel leaving a 20-30cm gap between them to stop sail damage.

7. To avoid squeezing the uprights with the leading edges, pass a velcro strap over the back of the keel and uprights under the leading edge, slide the sail and leading edge tip in its pocket.
8. Pull the sail over the leading edges, put the extra length of the upper surface over the mylar pocket, roll the sail after having folded the sail tip, roll the sail tip around the leading edge, slide the sail and leading edge tip in its pocket.
9. Tie the other velcro's around the glider trying to make as round a package as possible avoiding sharp angles in the Mylar.
10. Cover the glider with its bag and lay it on the ground
11. Disassemble the A-frame and fold inside sail
12. Ensure all protective padding is in place. Zip up the bag.

FLYING THE TOPLESS

TAKE OFF

The La Mouette TOPLESS has a very slight tail heavy static balance and is very easy to launch in all wind conditions. The nose should be held slightly above horizontal with the wing level. Your run should be smooth with appropriate pitch control to the air mass and once an excess of minimum air speed is attained, a slight easing out of the bar gives a smooth take off.

USING THE SPEED RANGE

Even very close to the stall, the TOPLESS retains an amazing amount of controllability for a very high performance wing. This combined with the excellent sink rate, gives big advantages in weak lift situations, although the glider should not be flown too slowly when scratching near a hill. The glider has an excellent stall characteristics with a large mush mode before the nose drops. Sudden entry into a stall with high nose angle is one of the most dangerous and uncontrollable maneuvers possible and can result in a tail slide and a severe tumble.

At the top of the speed range the glider will become quite sensitive to pilot input or turbulence but will track straight if you hold your position steady. Always slow down from a high speed run slowly otherwise the glider will rapidly pitch up. Sudden pitch inputs are not desirable on any glider.

TURNING

The TOPLESS is very light in roll, even at low speeds and retains superb handling throughout the entire speed range. Best handling is at speeds between min sink and max glide.

LANDING

It is best to approach your landing at just above trim speed with a slight increase in speed on finals. Bleed off this extra air speed until it is time to complete the flare. A good firm push will achieve a good flare and easy landing. In strong winds, just a small amount of push out is required to achieve a safe landing.

VARIABLE GEOMETRY

The sail cut of the TOPLESS allows for excellent use of the variable geometry system giving docile handling and excellent thermaling characteristics with the VG off. As the VG is increased, the speed and glide increase dramatically without losing too much handling. A full VG setting, the glider will track dead straight and fly quite fast although still retaining good handling. Unlike most modern high performance gliders at full VG setting, the TOPLESS remains controllable and is easily kept on course by small amounts of pilot input.

Sink rate also decreases with VG on. In weak smooth thermals far from the ridge a big gale climb rate will improve with approximately a third of the VG, handling will remain good enough.

TUNING

PITCH

If you find you either have to continually hold in or push out on the base bar, then the pitch trim will need adjusting. If the glider is trimmed too slow, move the hang strap one hole forward on the keel and test fly. If the glider is trimmed too fast, move the hang strap one hole rearward and test fly. If you find that moving the hang strap to all holes still does not trim the glider correctly, you may be too light or too heavy for the size glider you have. Contact your La Mouette dealer for further advice.

ROLL

If the glider shows any inequality in roll i.e. the glider falls into a turn or wants to yaw or turn off course, then there is a differential lift or drag force between the wings. First check your battens against the template and correct any out of shape then remove the leading edge from the side to which the glider turns and see if there is any damage or bends. If this is the case, then replace and test fly. If no bend or damage is obvious you may increase the camber of battens 8, 9 or 10 of the left wing. If there is a left turn, do not change the front part of the camber but prolongate the camber where the batten become flat. The back tip must not go down more than 4cm. If the turn is not corrected you can decrease the camber on the right wing, maximum 4cm from template.

MAINTENANCE SCHEDULE

Your TOPLESS glider will last many years if you take good care of it.

Generally, a hang glider is more damaged during improper rigging or de-rigging or bad transportation or storage than flying.

When rigging or de-rigging always choose a clean place away from any sharp rocks or wire, never force anything, if you feel you need an unusual amount of strength check for what can be wrong. Carefully wrap all sharp pieces with padding. Try as much as possible to roll the sail instead of folding it especially at the reinforcements.

Storage... If your TOPLESS is folded wet do not leave in its bag for more than three days. Open it as soon as possible to dry it out. A longer period particularly in warmer conditions could start the growth of mildew on the sail.

Avoid storing the glider in the sun even in its bag. Do not store areas containing chemical products.

Sea water atmosphere is very corrosive for aluminium and steel parts. Never store your glider by the sea. If you land in sea water or on a wet beach, immediately clean your glider with fresh water.

DO NOT DIP YOUR GLIDER IN WATER. If you land in water remove it as soon as possible. If your TOPLESS stays more than an hour under the water, contact LA MOUETTE.

Cleaning... Fresh water and soap will not alter your sail or frame component if you let it dry. never wash your sail under high pressure avoid using strong detergents on the sail.

Composite fabric like Trilam or Mylar sail are composed with glue. Never use a glue dissolvent on them (acetone, gasoline etc) particularly if the Mylar layer has some cracks through which the solvent can penetrate.

EVERY 50 HOURS

1. Inspect the sail checking all stress areas. Special attention should be paid to the wire openings on the under surface
2. Inspect all batten elastics and aluminium tip rod tensioner
3. Inspect the cross tubes, wires, fittings and central junction
4. Check all aluminium tubing for dents, damage, corrosion or wear caused by rigging, de-rigging and transportation.
5. Inspect all wires for frays and signs of swage damage or deterioration
6. Check all the battens against airfoil template
7. If any of the aircraft quality nyloc bolts require tightening, never over tighten as tube damage will occur.
8. Every year it is recommended that your glider has a full strip and check by an authorized La Mouette dealer.

EVERY 150 HOURS OR EVERY 3 YEARS

1. Change central piece strap.

2. Change hang loop.
3. Change cross bar tension strap .
4. Change side wires.

CROSS BAR INSPECTION

The carbon cross bar of the TOPLESS is designed to be stronger than a standard aluminium cross bar. It is particularly over dimensioned in positive loads. Due to the dual function of the cross bar, positive and negative load, it is unevenly over dimensioned.

In negative, the weakest point is the top and bottom of the crossbar from 10cm to 90cm from the keel side. This is very easy to check by just opening the double sail.

In positive, the weakest points are :

- ◇ the junction hole of the side cable
- ◇ the centre part of the cross tube, 1.30m from the keel

How to detect damage in the TOPLESS cross bar ?

Pass your hand over the surface of the carbon. It should be smooth with no splinters or depressions (dents)
look for any broken fibres

In the case of a big crash, i.e. mid air collision, hard landing in the trees or the glider falling from the car, the sail should be stripped off and the carbon and aluminium checked carefully either at LA MOUETTE or by an authorized carbon specialist.

If it appears that the cross bar has a small defect, it should be shown to LA MOUETTE or good pictures of the damaged point should be sent.

CENTRAL JUNCTION INSPECTION

The central assembly is the heart of the TOPLESS frame and it is very important to keep it in good condition.

Carbon central piece : the outside aspect must be smooth with no cracks in the fibre.

Aluminium horizontal plates : they are designed to be bent downwards and are not to be straightened.

Front strap holding the carbon piece to the keel : this must be in very good condition and changed every three years or 150 hours. It should be changed before any damage is visible.

Main axels joining the aluminium plates to the crossbar : it is important to have these connections properly tightened with a steel glue (Loctite). **Never over tighten**. Maximum torque 0.5m X kg. If the M8 bolt has been overtightened by more than 0.8m X kg, the steel mushroom axels must be replaced.

How to check the height of your floating struts ?

Remove the sail, lay the bare frame flat on the ground. Measure the height of the end of the struts over the ground. Measures are taken from the ground to the top of the tips.

280mm <he< 310mm

300mm <hi< 330mm

PURCHASE RECORD

Please complete this section for future reference

Glider model & size :

Purchase date :

Glider serial n° :

