



MOSQUITO TYPE CONVERSION

Intro: One of the delights of our sport is flying different glider types. It is great to have the opportunity to broaden one's flying experience and the Omarama Gliding Club welcomes the opportunity to offer you flying in the Mosquito. These notes should help you with preparation for flying this delightful glider but they are not intended to replace the need for a thorough briefing and familiarisation of the glider by a suitably qualified Instructor.

We trust you enjoy your time flying this glider.

Experience Requirements:

To fly the Mosquito, you must have:

- a minimum of 40 hours total gliding experience and a current BFR*
- at least two advanced dual training flights in the thirty days prior to the conversion.*
- satisfactorily conducted "spin training" – recognition and recovery*
- the first flight on type briefed and authorized by an Instructor qualified and current on type
- demonstrated a good knowledge of the aircraft's flight manual with particular regard to placard limitations and recommended handling techniques.

* these can be accomplished as part of the conversion

Basic Overview

The Mosquito is a single seat, 15m flapped sailplane constructed of fiberglass and manufactured by Glasflugel (same as Libelle). GON first flew in Jan 1979. It is number 66 of 100 built and is a delight to fly.

Take a look around the glider and consider the following external features with respect to flying this glider:

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|---|---------------------------------------|
| ➤ Tow hook position | launch stability / handling |
| ➤ Configuration of wheel and tail wheel | ground stability and t/o technique |
| ➤ Wing shape, aerodynamic design and position | handling and stall characteristics |
| ➤ Trailing edge flap and brake mechanism | take a close look at how these work |
| ➤ Tailplane | handling and stall characteristics |
| ➤ Position of aileron controls | t/o and ldg effectiveness, long grass |
| ➤ Pitot and static ports | what's where? |
| ➤ Water ballast fittings | -//- |

Now consider the cockpit features:

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|---------------------------------------|---|
| ➤ Canopy mechanism & jettison | the open / closing is different to most |
| ➤ Seating arrangement and adjustments | know how to get comfortable |
| ➤ Ballast | do you need ballast? securing it. |
| ➤ Instrument types and layout | get familiar with what's where |
| ➤ Radio | know how it works |
| ➤ Controls and adjustments | flt controls, flaps, brakes, u/c, wheel brake |
| ➤ Ventilation | know how to stay cool |

General Handling

Takeoff on aerotow:

Use Flap +1 and set the trim neutral for your cockpit loading.

Liftoff occurs around 40 – 43 kts. Settle in the high tow position and retrim for a tow speed ideally around 65kts.

The landing gear can be retracted on tow but for early flights, wait till you have released off tow.

For takeoff in strong crosswinds, high weights and / or rear Cof G positions, use Flap –2 until getting sufficient aileron control then move the Flap smoothly back to +1.

Glide performance:

Best L/D is 42:1 at 49 – 57 kts depending on weight with Flap 0

Min sink is 1.9 ft / sec (about 1.1 kts) at 43 kts

In light thermals with 30 –40 Angle of Bank use Flap +2

Stalling:

The basic stall occurs at about 35kts when light and 45 if heavy. The handling is docile with good aileron control available up to the stall and all the usual / typical symptoms of the approach to the stall and actual stall are evident. Relaxing the back pressure and reducing the angle of attack immediately recovers the glider to normal unstalled flight. The basic stall with Flap at +2 will often result in a wing drop. Stalling in a turn is typical of modern gliders; again, relaxing the back pressure will unstall the glider. If the stall is prolonged, the glider will roll to the lower wing and will probably accelerate, unstall and enter a spiral dive. A feature of the trailing edge flap / brake system is that the stall speed is slightly reduced when full flap and brake are selected. Rate of descent is already high in this configuration as the L/D is in the order of 4.5:1!!

Spinning:

Like all gliders, this one will spin! However, if not induced by non-normal circumstances (damage, ballast imbalance etc), it is said to be reluctant to spin in all but aft Cof G configurations. If a spin is entered, recovery is standard with the Flight Manual emphasising the need to get any aft stick / back pressure on the elevator released and opposite rudder to the direction of rotation applied. Recovery is likely to be nose low with bank on so the glider will quickly enter a spiral dive. Caution overstressing...relax the back pressure, roll towards the wings level attitude and ease out of the dive.

Circuit and landing:

Select Flap to +2 and accelerate to the "Safe Speed Near the Ground" (Basic stall speed, + 10 + ½ the wind speed) and trim. (say 36 + 10 + 5 in a 10 kt wind gives an approach speed of 51 kts). Plan for a slightly steeper approach as the glide path control is very good due to the extremely effective flap / brake system. Fly a normal base leg and establish on final approach. Use the brake to achieve the desired glidepath. As you approach the flare, ease on more brake and counter with the flare to the two point attitude for touchdown. Avoid excessive airspeed as the glider will float in ground effect. Also avoid a large and rapid reduction of brake as this will have the undesired effect of inducing considerable sink as the flap is reduced as part of the flap / brake reduction. In stronger winds / turbulence, fly the circuit with flap at +1 or 0 as this gives better aileron control.

First Flights:

Some thoughts on what objectives to set for yourself in your first few flights in the Mosquito:

- get organized and be ready to fly when you want to without rushing
- pick favourable conditions...avoid crosswinds, strong winds, low cloud, poor vis etc
- check you have a good, competent wing runner who knows its one of your first flights on type
- get out on the grid, get comfortably strapped in and to set for the launch
- check again you can reach and operate all controls and instruments comfortably
- takeoff and tow to 2000+ft to allow time to get familiar with the glider's handling characteristics
- try the gear retraction and extension then retract for further flight
- do some normal and steep turns
- think of what you expect the symptoms of the approach to the stall and the stall itself will be then try slow flight and then a clean stall. Note the handling on recovery. Then set up flight at an appropriate circuit / approach speed and try setting the flaps and then extending the brakes. Note the attitude and trim changes and the maneuverability in the landing configuration. .
- check the handling characteristics during stalls when turning clean and in the landing configuration (gear down, flap and brake out) Pay particular attention to the symptoms of the stall onset.
- try flying at higher speeds; note the attitude changes and handling at other flap settings for faster flight. Note the glide performance...its very good!!
- join the circuit with time to assess conditions, perform pre-landing checks and fly a normal circuit for a slightly higher final approach than what you are probably used to in other glass single seaters. Fly the approach to an aimpoint set a little into the field to cater for any unintentional undershoot.
- on later flights, explore out of position towing by boxing the towplane slipstream
- try flying at VA and if it is smooth, at VNE. Note the handling and performance at these speeds

Limitations

V_{NE}	Max permitted speed With flaps set at 0, -1 and -2	135 kts	this is valid up to 13,000ft amsl. only 1/3 control input ok at this speed
V_{FE}	Max speed with flaps extended	108 kts	with flaps at +1 and +2
V_B	Max speed in strong turbulence	108 kts	apply in rotor and strong thermal gusts
V_A	Max speed for manoeuvring	108 kts	full control inputs are ok up to this speed reducing to 1/3 full input at V _{NE}
V_T	Max speed on aerotow	81 kts	
V_w	Max speed on winch / auto launch	81 kts	(65 kts with water ballast)

Load Factors

Airbrakes closed	up to 108 kts	+5.3 / -2.65	Airbrakes open	+3.5
	108 – 135 kts	+4.0 / -1.5		

Max All Up Weight (MAUW)	450 kg	
Current Empty weight	286.5 kg	
Min cockpit weight, including parachute	70 kg	
Max cockpit weight, including parachute	100 kg	
Max load in luggage compartment	10kg	remember to take this into account if carrying water

Flying with water ballast:

The glider can carry up to 115 litres of water. Don't carry water above the freezing level.

Familiarise yourself with the water ballast controls, fittings, weight calculations, limitations and filling procedures.

When calculating how much water you can load, get the calc. and measure of the water checked by another pilot.

The cockpit control of the dump valves is a black knob on the right cockpit sidewall.

Lever **AFT**... the valve is **CLOSED**.

Lever **FORWARD**... the valve is **OPEN**.

Do not fill tanks under pressure. Fill with equal quantities through the plugs on the upper wing surface with the wings held level. Tape over the plugs when filling is complete. Check the vents are not obstructed and that the drains under the wing are free.

Brief the tow pilot and wing runner that you are carrying water ballast.

Consider using Flap at -2 for the start of the ground roll till ailerons are effective, then set Flap +1.

The tow speed should be around 15% faster than when unballasted; around 70 –75 kts (Nb 81 kts max)

Dump the water before landing. It takes approximately 4 minutes to empty full tanks.

During high altitude flights without water ballast, the water dump valve must always be kept open.

Aerobatics are only approved without water ballast and a MAUW of 380kg

Aerobatics:

The glider is cleared for inside loops, spins and lazy eights when water ballast is not carried. You must have completed appropriate aerobatic training in accordance with the GNZ Training Syllabus, be appropriately endorsed and current in aerobatics and authorized by a suitably Qualified Instructor before trying aerobatics in OGC gliders.

Administration:

When flying away from our base at Omarama, the club is reliant on pilots recording their flying times on the OGC timesheets, usually located in the back of the glider's trailer or the CGC Clubrooms. It is imperative that flights are accurately recorded and at the end of the day, the timesheets should be checked, flying times and



number of launches totalled and the detail transferred to the Tech Log (DI Book) in the glider. The charge for the glider is 80 cents/min and this will be billed direct by OGC so please ensure we have your correct mailing address.

Insurance:

The Mosquito, like all OGC gliders, is fully insured for ground and flight risk and the Club holds \$1,000,000 Third Party risk insurance. Non-club members flying OGC gliders accept liability for payment of the Insurance excess in the event of any incident or accident that requires a claim against the policies held or for repairs up to the value of the excess. The excess for ground and flight damage is \$2000.

Care of the glider:

Please keep the glider clean. Use a clean chamois and minimal water to wash the glider. Avoid scratches from rings on fingers etc. Never use petrol, alcohol or thinners on the surface. Vacuum the cockpit when required. Take extra care cleaning the canopy. Clean bugs off after flight before hangaring / derigging. Remove the battery for charging; the charger is currently located in the Clubrooms.

Rigging: (it is similar to the Libelle except the controls hook up automatically)

Use a minimum of 3 able people for rigging. Clean and grease the main pins and have them set ready on clean rag in the cockpit. Set the flap lever forward, brakes neutral and the ballast dump lever closed (aft).

Rig the Port (left) wing first and temporarily lock the wing in position with the main pin by engaging it only in the front spar fork bush. Check the flap, brake and aileron fittings engage in their automatic hook-up points.

Rig the Starboard (right) wing like the left, pulling the wings together with the rigging tool. Remove the main pin, check and achieve alignment of the bushes then reengage the main pin till fully home, then lock.

Push the tailplane onto the rigging-drive pins and pull out the front connection using the small rigging tool, push the leading edge of the tailplane down and push the front connection pin fully aft into position then remove the tool. Check all controls for full and free movement in the correct sense. Tape over the wing and tailplane gaps.

Complete the Daily Inspection.

Derigging:

Again, use 3 competent people and get the trailer and equipment organized before commencing.

Remove the tailplane and fit to the trailer cradle. Set aside in a safe place.

Support the wings, remove the main pin and remove the wings and fit trailer fittings and stow.

Stow the main pin and rigging tool in the cockpit, lock the harness and ensure there are no loose articles left in the cockpit so the glider is always left safe to tow just in case trailering is required later.

Tips: *(no...we aren't talking tips for service... but a beer to celebrate your type rating wouldn't go amiss!!)*

Take time to sit in the glider and get comfortable with where all controls and switches are.

Practise changing flap settings on the ground, aiming for smooth, comfortable manipulation of the flap lever through its full range. Be careful with the canopy as it is very easy to disconnect it from its hinge system. An extra pair of hands to assist in early opening / closing practice helps.

Need To Know:

- Your responsibilities and limitations when flying this glider.
- How to rig, DI, operate (including the limitations) and derig the glider.

Further Reading:

- Mosquito Flight Manual. More thorough info on the glider; both operational and technical detail.
- Soaring Magazine Aug. '79. Flight test report and notes by Dick Johnson
- The Glider Pilot's Manual by Ken Stewart. Pg 190-191 Good gen on flap/brake mechanisms and handling characteristics.

Enjoy your flying in the Mossie

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