

Seagull Models

Maxi Lift

by Stephen Green

LOOKING FOR A NEW FACET OF FLYING?

Why not glider towing? I've had a few goes at hauling gliders aloft and it's fun. Something I've always wanted to do is attend a scale gliding weekend and have a model on-line for tow duty. I may rue the day in saying that I'd be happy just doing that all weekend. The main attraction is an endless number of approaches and short field landings, rolling to a stop adjacent the next glider. There are a few challenges. The glider remaining on station and co-ordinating of both variables in a turn increases the heart rate. Well it does to me, but I haven't done a lot of towing. With this activity going on all around the country, every weekend, there is a proven way to manage it. High rate of climb provides the easiest answer to both.

A SAD TALE

There's much more to this model than glider towing so if you don't mind indulging me a little. My first glider tug was in 1974. Aeroflyte Invader Mk 11, three channel trainer with a clapped out loop scavenged OS 19. Glider was a 60 inch two channel Veron Impala. The snap rolling champion of all trainers dragged that Impala aloft a few times, until we got a little out of shape during the initial climb. Glider too low and it was patently obvious that full down elevator on both models was not going to salvage the situation. That's when I learnt the importance



of a reliable release, and why each model should have one. The standard servo on the glider worked perfectly in a straight forward flight. However, with the glider all but hanging off the tow line in a sixty degree nose up attitude, it couldn't overcome the load. No release on the tug, crashing both models was imminent. My models. Yes, I was about to stick two in at once, but the line broke. With insufficient altitude for Dad to recover the Impala, it thumped in on the nose. Another lesson learnt. How to laminate and reshape balsa block.

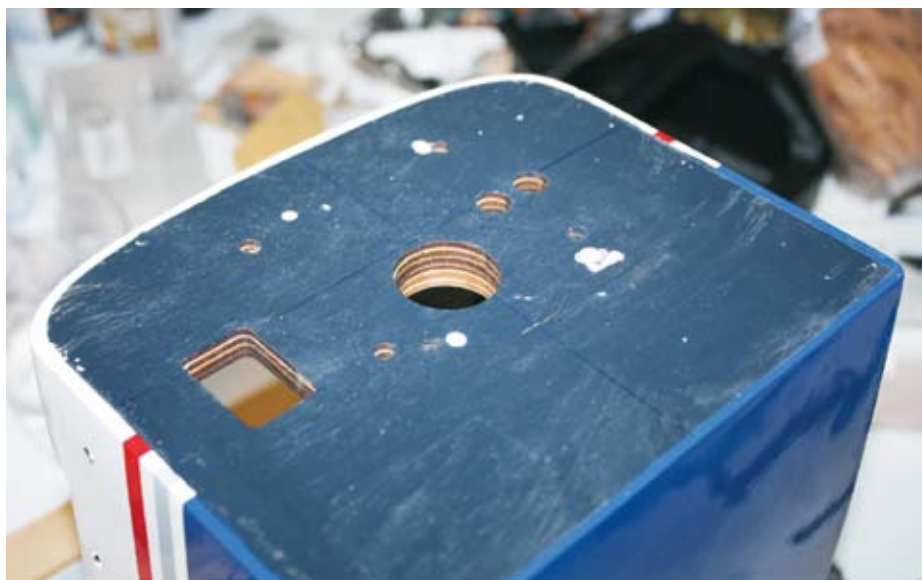
My most successful tug was a third scale Sukhoi SU 26. Seven horsepower would drag a five metre glider up at thirty degrees, even if the glider pilot (Steve Keep) felt the need to axial roll on the way up. Tow line snagging the hinge line of the aerodynamic counter balances was an occasional problem which



Dubro ball tip driver dipped in white out marks where to drill

SPECIFICATIONS

Wingspan	2222mm (87.6 inches)
Length	1555mm (61.2")
Suggested Engine	15-.33 cc 2-stroke 20-40cc 4-stroke
Engine used	OS 160 FX two stroke
Flying Weight	5.97kg (as tested)
Servos required	8 std size plus options
Servos used	11
Channels required	5 minimum, using Y leads 1 in-line servo reverser on Flap
Channels Used	9
Airframe	Balsa- Ply -Oracover Film





One bright spark suggested entering it in the Shepparton Mammoth Scale as a Cessna 180

partially jammed the rudder, or an elevator. One thing that always struck me about that combination was the difference in scale between the glider and tug. Third scale tug, quarter scale glider just wasn't quite the look I was after.

A few years back I had another go and hooked a 5kg 4.9 metre Multiplex DG 500 onto the back of a .46 size Harmon Rocket. Horsepower was increased to a 120 Magnum two stroke. 4HP was plenty. Against all advice, the tow release was fitted right at the tail as per full size. This worked okay on the initial climb, where both models could clearly be seen, but it was all but impossible at altitude. On the third flight we encountered the same scenario as the one in the 70s, this time 100 feet agl.

This time I was ready. JR 8411 servo on 6 volts cast that glider adrift in milliseconds. The glider pilots' worst scenario is being dropped off the line soon after takeoff. Leaving the glider pilot to his own devices I pulled the 3 kg tug up into a vertical climb and

punched out at a thousand feet a few seconds later. Looked around to see how the glider fared. That would be my glider. Dad had insufficient altitude to recover. Fibreglass fuselage needed more, much more than a simple repair to the nose.

100% SCALE

And so, the move to a scale glider tug combination. Not a scale tug per se, but the size of the model matches my 1/4 scale Nimbus 4. The model in question enables a recreation of a successful glider tow day at Dixons Creek when Giles Hill dragged my quarter scale 6.5 KG Multiplex DG 500 aloft with his OS 108 powered Big Lift. Sadly, space in my model rack is no longer required. Not for a tug related reason. Should you choose to fit the tow release, these anecdotes are not meant to put you off glider towing. The intention is purely to point out that there is a right way to go about it.

Designed and kitted by Multiplex in the 80s, the Big Lift was a multi purpose model. It has been faithfully

recreated in ARF by Seagull. The design should prove popular with servo manufacturers too.

Options abound on this plane with easy access to all systems by way of three large hatches. A very handy pair of flaps, tow release and a bomb bay. Oops! That would be the large multi purpose cargo hold with operational split doors for rapid unloading through the bottom of the fuselage.

Dropping paratroopers is one such mission that comes to mind where rapid turn a round in between drops isn't really an operational requirement. When the mission is dropping wrapped food parcels to children in desperate need of a sugar fix, rapid turn around is vital.

Nevertheless, Seagull have taken that into account. There is no need to shut down and upend the Maxilift to reload. Open the large hatch on top, engine ticking over and mere seconds later, one kilogram of Minties could be rolling down that runway. Parents will thank you for it.



Purely for convenience, the supplied engine mount standoffs substituted for OS M5 units



Masking for the Bisson Pitts muffler outlets, OS 160 FX

Seagull Maxilift



Side mounted
OS 160FX
OS GT 33
inverted
installation

WHAT ENGINE

The suggested size on the original is .90 – 1.08, side mounted, to remain mostly within the cowl. A muffler extension may be required. Instructions and the box lid also show the OS 33GT petrol engine, though this is an inverted installation. Increasing the power would make the model more suitable for my dream weekend,

as it would enable towing gliders above 3.5 metre wingspan. Bearing in mind a reader's request for review models to have the appropriate level of power, my propensity to go for a very high powered option was put aside. Slightly.

Purely because I have a number of them, the OS 120 AX two stroke glo

was a front runner. Side mounted, the Powerbox muffler all but hides neatly inside the cowl. If tug operations are not going to be your thing, but low operating cost is, I would go for the new OS GGT 90 petrol engine. Economy of petrol, not much gunk to clean up at the end of the flying session and no ignition system. It uses a special glo plug. Even though there is room inside for three ignition systems, it's one less thing to fit and one less battery to charge.

Another engine considered was the OS FT 300 Super Gemini twin four stroke, but I'm saving that for a scale

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Openings for the needle valve and onboard glow igniter. Ample cooling with small flap underneath

model. Finally, after all these deliberations, in went the OS 160 FX. Which is just over the upper end of the suggested horsepower.

That's horsepower, not engine capacity. Simple to operate and in terms of fuss free horsepower, this beauty punches well above its weight.

ASSEMBLY

With quite a number of Seagull models in my fleet, there's nothing out of the ordinary to report. From a production point of view the only thing that was wrong was the hole for the fin-stab brace. It's in the wrong position. The standard of the instructions hark back to when production of ARF models was rather new. All the usual points such as removal of covering before glueing tail surfaces in place are covered. These were often omitted in the early days. It must be stated that assumptions made that this model will be put together by an experienced modeller had me scratching my head at times.

Making that same assumption, let's skip over the basics to point out a few issues that mostly relate to the fun options of the project. Little things such as screw selection, which chewed up extra time.

ENGINE INSTALLATION

The measurement of 150 mm from the firewall to the prop driver is incorrect. It should read 190mm. Included in the kit are standoffs and long bolts, but a set of OS engine standoffs hanging on the pegboard did the trick nicely. This just makes engine removal quicker. Blind nuts already installed in the firewall look to be for an inverted installation for the GT33. There is a nylon radial engine mount also supplied. These



Corner of bench provided a simple solution to working on the fiddly bits underneath

work well, I have used one of these with a .35 two stroke but fitted a metal mount. Purely out of convenience, holes were already drilled. The engine was side mounted. Muffler was a Bisson Pitts style, which all but remains within, but the cowl had to be relieved at the front. Discovered that the hard way.

Not a motor race on TV to be seen, back door open to let in the sunshine and stereo on made for a very enjoyable day. Blind nuts for the button head cowl bolts have been installed at the factory. Dubro ball tip driver makes winding them in and out easy. Marking, measuring, marking, measuring I was quite chuffed at the newly installed hole in the cowl for the cylinder head. Best one I'd ever done. Then, a valuable lesson was learnt. Suddenly, there was a problem with the fit. We all know why measuring twice and cutting once is a good plan.

We also know that consuming alcohol and operating heavy machinery don't mix. But, this was only a Dremel Moto Tool, and I only had three beers. Suddenly all my good work went out the window, I couldn't figure out why oh why that cowl would no longer move back over the engine. What had I got wrong? Alcohol, safety glasses and high speed grinding of fiberglass posed no safety issues, but that combination obviously had an affect on clear thinking. It finally dawned on me that the front of the just fitted muffler was impeding progress. That happened

after enlarging the opening around the cylinder head to an embarrassing level had been completed. This was of my own doing but it took the shine off the day. Bummer.

Ordered a spare. Next time the order of proceedings with the grinder will be cylinder head, muffler, then the needle valve.

TOW RELEASE

A half inch open end spanner is the correct size for the large retaining nut. Set this up before doing the cargo doors. Not as fiddly. This is a very basic design which relies purely on servo power. Using a standard servo (3.5kg torque) is risky. As long as the tow goes to plan it is okay, but if positioning gets out of kilter you run the risk of not being able to drop the line. At the minimum, use at least double. Mine has a 10kg-cm coreless motor dual ball raced number.

CARGO DOORS

Anyone who has tackled undercarriage gear doors will appreciate that this will be quite time consuming. It took nearly two hours to complete. There are so many screws. Six hinges with eight screws a piece requires 48 holes to be drilled. To save you scratching your head as to which screws to fit, I used the small self tappers into the actual door and the longer ones into the fuselage floor. Scouring for the correct screws, I took the punt that the two long set screws for the bellcranks were in the packet for the engine mount. Or were they with the wing struts? Place a



Trim the pushrod release wire after setting ATV



This was set up as per the instructions. Relying on servo power to hold the doors closed is not ideal, I opted for a simpler, safer system using a dedicated 180 degree

FLAP

Three holes in the lower wing skin near the trailing edge are pilot holes for the flap hinges. I trialled a few set screws before taking the plunge and using one of the many self tappers. Added a piece of big bore silicon fuel tube over the top of the rear hinge fingers as a keeper. This would probably be okay if using a petrol engine as the likelihood of residue that far outboard would be minimal. Offsetting the servo arm output towards the trailing edge, two notches, will increase the amount of travel.

Not the original brand, but this style of ordinance is accepted as best practice



few drops of thin CA into the actuating horn on each door too. One popped loose when setting up the throws.

edge of the cargo bay, to screw the doors closed.

TEN SERVOS

After completing the setup using bellcranks and a standard servo, with the weight of a large packet of "Minties" bearing down, I had my doubts that the doors would remain closed. The actuation horn on the door was moved out another 20mm. Greater mechanical advantage improved the lock in the up position, at the expense of some travel. Using a standard servo on a gear door goes against the grain for me, battery drain, and this installation was completed purely for the perspective of the review. The standard servo was then swapped for a 180 degree retract unit with a long Dubro servo arm. I could revisit this later and install another retract servo, one per door but it works fine as it is. If you have no interest in joining bomber command, blind nuts have been installed into the bottom

If using the tailwheel steering springs the nine servo specification in the instructions is correct. Springs may be okay, but they're not for me. Directional authority is reduced once the wind gets up. Even if you have no intention of ever landing this model crosswind, making the turn to line up is often a problem. Which is I why I never use them. One could just increase the spring tension but I installed a separate steering servo. A bog standard Hitec HS 422, torque rating of 4.1 kg-cm – on six volts. Which is what drives the ailerons and elevators too! Due to one way load from the closed loop cable system pulling on the output shaft, rudder has the Hitec HS 425. Standard output, twin ball race. Another 422 on throttle and a pair of old technology 10kg coreless numbers for flap.

MUFFLER PRESSURE

I fitted three fuel tanks. A 14oz and a 12 oz, for increased capacity. The rapid descent from altitude is one of the fun aspects of glider towing. Experience would suggest that a steep descent at one third throttle would be quite acceptable and not over stress the airframe. To avoid the possibility of fuel starvation, once the speed has equalised in the dive and the fuel moves to the front of the tank, in went a 2 oz header tank. Which enables a vertical descent, at idle.

I would fit a header tank with a petrol engine too! Walbro carbs may very well suck like a Hoover on steroids but they can still suck a gut full of air. Muffler pressure on the Zenoah G74 in the Sukhoi presented no problems, over a long period of operating. The smoke system was also pressurised,

which all but eliminated the problem of interrupted smoke trail when tank levels became low. Thoughts of fitting smoke to the annoy the glider pilot did arise, but glo fuel should do the trick nicely. Complaint procedure is to point out that oil residue on the canopy is actually for their benefit. Purely an indication that the accepted low tow position was not adequately maintained to the required standard.

READY TO ROCK

Hitec telemetry GPS for altitude, SY five second glo igniter, 2500 m/Ah five cell Eneloop RX pack and a 2000 mA/h 4 cell pack in the forward compartment drives the on board glo, she weighed in at 5.97kg.

BOMBS AWAY

Ingenious modellers have put hours of time and effort into perfecting the seamless Minty Bomb run. Only those who have taken the time to obtain this rating will understand that a 1 kg payload is never enough. It's a bit of work to develop the perfect system.

First on the list of upgrades would be eliminating the chance of a Minty jamming a bellcrank, thus depriving children of the chance to devour oil covered sweets after a frantic chase. Which is yet another reason not to use castor oil. Not if you want parents to bring their children back next year. Another reason why the veritable Minty is the preferred ammo. Individually wrapped.



Three tank setup is for increased fuel capacity but facilitate reliable fuel feed in vertical descents at low throttle. Tank 3 (RHS) - muffler pressure into the vent, clunk line connects to vent on Tank 2. Clunk line on Tank 2 (LHS) connects to vent line on the third tank. In the centre is Tank. This is a Header tank, no flexible clunk line. The vent is at the top of the tank as per normal.

The most ingenious bomb bay I've seen was a rotating ferris wheel, with eight buckets. The drop and reload worked a treat but capacity was an issue. The Seagull setup offered provides an entry level into this..... world of fun. My best time from bombs away back to two hundred feet for the second Minty run was under two minutes. An impossible time, if using the supplied thumb screws to secure the top hatch. The model has the potential to carry a much larger

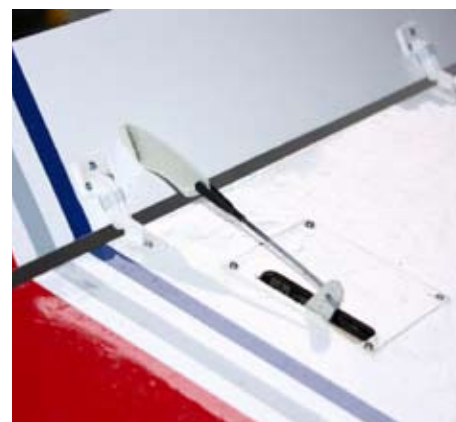
payload, which is something I intend to develop. This specialised mission will also be revisited in a later issue.

MISSION ACCOMPLISHED

When the Multiplex Big Lift was released it was a big model for the time. With a forward, top, bottom, aft, and six servo access panels the hull of this modern version seems to have more hatches than a submarine. At any rate that's what it feels like after putting in all the screws. It's easy to wind off the soft screw heads after repeated use. Small Parts and Bearings (Hobby Shop Services Directory) sell packs of small good quality zinc plated self tappers in 2 and 4 gauge. This is the only improvement



Directional control on the ground is very important to me. Replaced the tail wheel steering springs with a servo. Spare aileron servo mount, in bottom of fuselage, made available after non glider related operation



Long Dubro servo arms make achieving sixty degrees of flap easy. Make sure you fit the correct model for your brand

Seagull Maxilift



I can suggest. It's worth putting a drop of Locktite on the wing strut bolts at the start of the flying session too. An attractive colour scheme, the covering job is very neat. I took an extra hour and sealed the very fine edges with Humbrol clear enamel. I didn't log the build time, but with extra systems on board which did account for some, it was around twenty five hours, spread over five days.

With the 160 swinging a 17x10 it will chug slowly uphill, hanging off the prop. You can opt for far less power with confidence, as this combo will easily take off at less than half throttle. My fuel tank setup works as anticipated, tested through a multitude of different vertical descent profiles, from altitude. In show off mode (pushing the envelope) "Blowing a flap off test" by extending them at high speed was a non event. In practice there was no need to select flap in the dive. I could consistently get in from 500 feet above the strip, by selecting full flap when bleeding off speed in the turn. Basic aerobatics are well within its domain and it does a very nice flat spin too! That manoeuvre has to be done clean, it won't develop with full flap.

First-class manners are evident when one has the confidence to three point



Individually wrapped sweets not appreciated by those operating within the bovine industry. To avoid upsetting the locals the mission brief called for a bio-degradable payload which was fully recovered and offered to club members as refreshment. There were no takers. Augered in from two hundred feet, ripe mandarins don't fare that well

Seagull Maxilift



land crosswind, with full flap. Control authority remains positive right down to the point of stall, with flap extended. Yet another model that explodes the myth that thin wings have bad stalling characteristics. It's lovely. There's certain charm about a high wing utility aeroplane. Of the three I've had at this size, CM Pro Cub and Seagull Decathlon, this one flies like a bigger, more complex version of my Multiplex FunCub. This was a fun project. The forward and top hatches would also make it a cinch for electric power too.

The Seagull Mazilift is distributed to hobby shops by Model Engines Australia
03 87935555 www.modelengines.com.au



Four horsepower is really only needed for glider tug



Slipping back in from one thousand feet. Brilliant flaps



Control authority remains positive right down to the point of stall, with full flap extended. Nice manners