

Chapter 5

Towing Gliders

This Chapters contain information for towing gliders and complements the main POH specification which is important for maintenance flight performance of the Eurofox.

General

The EuroFOX 912S Tow is permitted to tow gliders.

Caution	Rope release is orange colour and is located in the center of instrument panel below throttle.
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Flight limit

Towing gliders is permitted according to data in this table:

- Maximal Take Off weight of glider.....	750 kg
- Maximum take-off weight of towing aeroplane	500 kg
- Towing rope must have at least one weaklink fitted:	
- Maximum Breaking load for weaklink	3 000 N (300 kg)
- Aero tow cable length	from 40 to 60 m

NORMAL PROCEDURES for towing gliders

Before Take Off

- | | |
|---------------------------------|---|
| - Brake | set the brake |
| - Electric boots pump | Switch On |
| - RPM | 3500 rpm, check mags |
| - Pitch propeller | fixed, should be the approved towing propeller |
| - Trim | functional check, set half way |
| - Wing flaps | Set as appropriate |
| - Master switch | On |
| - Ignition | On |
| - Other switches | On as necessary |
| - Main fuel tap | On |
| - Wing tank fuel taps | open, fuel quantity check and panel low fuel light warning light not illuminated (check bulb) |
| - Instruments | check temperatures and QFE or QNH setting as needed |
| - door trapped and hanging out | secure at both closing points check seat belts or that nothing else is |
| - Check runway | Check no traffic on runway or on approach |
| - Check towing rope | Tack up slack in tow rope and check in the mirror |
| - Give signal to launch control | Ready to Take Off |

Take off:

- take off roll maintain 80 -95 km/h
- speed max. cont. power, max. 5500 r.p.m., setting optimal peach propeller
- airspeed is depend of type of gliders 100 - 140 km/h IAS
- engine instruments within limits

Caution	During Take Off rolling and climbing check attitude of glider in back mirror.
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Climbing:

- Maintenance speed in range 110 – 130 km/h it is depend of type of glider
- After Take Off flaps position – 0.
- Check RPM to 5100-5200 rpm static and 5400 continuous in the climb rpm. Change only pitch of propeller, Throttle is fully forward and on full power.
- Check attitude of glider in the back mirror

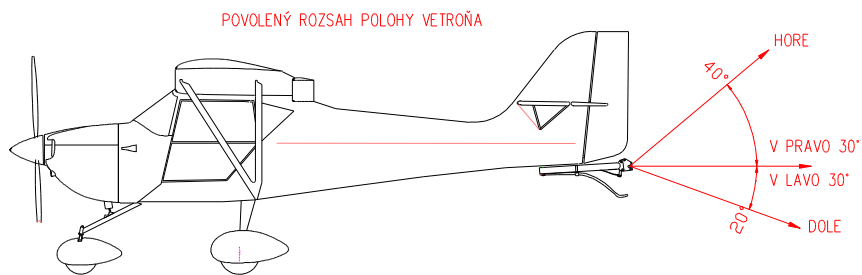
Warning	Maintain airspeed during climb in desiderative range
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Cruising speed according agreement of limitation glider

Descend after releasing the glider according to chapters 4.4.11 a 4.4.12

Before landing pilot has to go to low past to rope drop on the designate place, or land long to avoid cable snagging

Approach and landing according to chapters 4.4.14



UK Tow aircraft

The LAA have approved the EuroFOX tug to be used with “3 people in the combination” which is specifically for pilot training or familiarization. Under UK rules, those giving instruction cannot be remunerated, and the EuroFOX is expected to be operated in a club or private environment.

Operating notes and advice on aerotowing with EuroFOX nose and tail wheel version aircraft.

In both nose wheel and tail wheel versions, the EuroFOX tug aircraft is an extremely capable performer. On first sight it might appear diminutive to some with only 100 HP under the cowling, but make no mistake, in competent hands this aircraft will provide amazing towing performance.

For those pilots who are not ‘au fait’ with flying this type of light aircraft, the following should be taken into consideration.

The EuroFOX is a delight to fly possessing light powerful controls, needing coordinated rudder and aileron to maintain the ball in the middle. Sloppy handling, coupled with an iron grip on the stick to shove the stick to all four points of the compass, will not get the best from the EuroFOX. She is not a Pawnee or similar and doesn't need to be brutalized to get her to fly. The EuroFOX sideslips beautifully and easily and is well coordinated when doing so. This more than compensates for the fact that when the flapperons are drooped in flap mode, you don't get a large amount of drag. You will get a very nice nose down pitch enabling an excellent view over the nose for landing.

Take off

If your EuroFOX is the nose wheel version, it pays to get the nose wheel off as early as possible at the start of the tow, then balance the aircraft on its mains with the nose wheel just clear of the ground. Acceleration will then be enhanced and in all probability you will find lift-off will occur before the glider! The EuroFOX tug needs to be kept low to pick up the necessary speed before climbing away, therefore avoiding compromising the glider. Whether half flap is used to aid take off is debatable: most of the towing we have carried out in the UK with the nose wheel version used no flap at all.

With the tail dragger version of EuroFOX, our own preference is to use half flap for take-off, raise the tail quickly off the surface very quickly, running on the main wheels, the EuroFOX rudder is very powerful. As soon as airborne, fairly smartly retract the flap. Unlike a conventional flapped aircraft, this doesn't result in things suddenly becoming interesting! We would only use half flap if operating off longish grass or wet soggy ground as we found this helped to reduce ground roll distance. On short hard grass surfaces or tarmac/concrete, we would not use any flap. With both versions of the EuroFOX, we would suggest that tug masters form their own opinion by “experimenting” with the use of flap for take-off to suit your own site. We found that during our 25+ airfields that we have aerotowed at, the above comments are sound. There are slightly differing technique between nose wheel and tail wheel EuroFOX versions to achieve best results.

What does need to be recognized for both types, is that they can be classed as low kinetic energy aircraft, meaning in reality that lift-off can be fairly quick, more often than not before the glider. The EuroFOX must be held down at just above the runway to pick up the necessary speed before climbing out satisfactorily with the glider behind. Conversely on landing, the speed will decay more rapidly than a much heavier aircraft. This is NOT a problem in operation and really is more a perception of a problem for pilots new to this type of light aircraft. We have safely operated both nose wheel and tail wheel versions in crosswinds of 18-20 knots, which is well outside the POH limits. We do not recommend this, only point to be made is like many things, it depends on familiarity with the aircraft and the need to exercise common sense and discretion.

During the tow

During the tow, the EuroFOX, as mentioned above, has light but powerful controls. On many occasions when demonstrating the EuroFOX the glider has carried out ‘boxing the tow’ manoeuvres, where the EuroFOX has proven to be well capable of contending with the out of balance towing forces. Once off tow, particularly if very close to the launch point, the throttle can be shut completely and the aircraft accelerated downwards at 100 knots, or more if the air is smooth. The Rotax 912S

engine is water cooled and does NOT have the traditional shock cooling issues normally associated with air cooled engines if the descent is badly managed.

We must however point out that the EuroFOX can optionally be fitted with a pilot operated oil cooling flap. This certainly aids warm-up time when the engine is cold, but it must NOT be forgotten when towing or the engine temperatures can rise above the green marked line limit. We suggest as a rough guide, that in cold weather the tow is started with the flap shut. Monitor throughout the tow, and when the needle of the oil temperature gauge just gets to the point of where it's near to the start of the green operating range, then open the oil cooling flap control a little and continue to monitor. Very quickly over a series of tows, a picture will emerge of how and to what degree the oil flap needs to be opened on your particular aircraft.

On hot summer days, the advice is very definitely to start the tow with the cooling flap fully open and to leave it there throughout the tow.

After glider release

Once the glider has released, our own technique is to leave the cooling flap in its current position and then as soon as the oil temperature starts to drop, gradually close the flap over the rest of the descent, keeping some warmth in the oil. If the cooling flap is closed immediately on glider release, we have found the temperature will then rise further before dropping back. Therefore do NOT be in too much of a hurry to fully close the cooling flap! It may take a few tows to get used to, but it is one that is easily mastered when monitored. It is not drastic if the oil temperature is pushed into the upper yellow arc occasionally and in fact is to be encouraged as it will boil off any water that may have condensed out in the oil, thereby helping to prevent internal corrosion.

Summary and other points

Other benefits of the EuroFOX tug, is that it has a superb towing mirror which doesn't vibrate at any engine rpm, quite unlike the mirrors on many tugs! It is very easy to take up slack in the rope to the point of all out, just by use of the mirror alone.

The tail wheel comes with a choice of spatted wheels are larger tundras. The close spatted wheels work surprising well even on wet grass, our recommendation however is to use the tundras on all grass surfaces and the standard wheels and spats if you have hard runways. The nose wheel version has only standard wheels and spats.

We set the Duc Winspoon propeller so that at the typical towing speed of 60-65 knts, 5,400 rpm shows on the tachometer. This gives excellent performance and results in a very sensible buffer of 100 rpm below the max continuous rating of 5,500rpm. It is **definitely** not advised to adjust the propeller to give more rpm up to the 5 min max of 5800 in the belief that it will enhance take off performance. It may release a small increase in HP, but the reality is that it could well give rise to overspeeding and consequent engine damage and therefore to be avoided. Customers should take advice from Rotax directly. The EuroFOX is an excellent towing aircraft, but they are not Pawnees and it is pointless to try and make them so.

The above has been compiled to give a good degree of guidance on how to operate the EuroFOX in the towing environment. It is not exhaustive by any means and as we mentioned earlier, within its framework, tug pilots can hone their skills to best match the EuroFOX.

EuroFOX Aviation

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