

YORKSHIRE GLIDING CLUB - ONE YEAR OF EUROFOX

INTRODUCTION

Since her first flight on 20 September 2013 the Yorkshire Gliding Club (YGC) EuroFox 912 ULS has launched over 1200 gliders, converted 20 pilots, and clocked 340 hours flying. The Club has reduced aerotow launch fees by 20%, and carry out servicing and routine maintenance tasks under the LAA engineering regime; this has resulted in valuable overall cost savings.

This paper highlights important lessons learned from the decision to incorporate EuroFox into the Yorkshire Gliding Club tug fleet, and should remind tug pilots of the different considerations and operating techniques required for safe, effective EuroFox operations.

EUROFOX

Although weighing in with an empty weight of less than 300 kg, EuroFox is extremely robust, and has taken some considerable 'abuse' during her first year at YGC. The only failures that have occurred have been attributable to either operator or builder (we live and learn) shortcomings and none have resulted in a hazardous incident:

- **Rudder pedals and brakes.** Much of the early flying took place during the winter months when pilots wear footwear that tends to be too big for the EuroFox rudder pedal/brake system. Reports of heels catching the front edge of the floor plates necessitated moving the plates forward as far as possible, and indicated that some pilots were resting their feet/heels too far forward. The black paintwork on the P1 set of brake pedals was also wearing faster than that on the (bottom) rudder pedals, indicating that pilots were 'riding' the brakes and rudder pedals quite hard throughout all phases of flight. Larger pilots should consider removing the aircraft cushions and using the Club's energy absorbing cushions instead.
- **Rudder centring spring.** One pilot succeeded in kicking the centring spring shaft off the rudder bar hook. This incident (and the symptoms observed above) prompted a rebriefing for all the YGC tug pilots on the importance of appropriate footwear and foot positioning while flying all the Club tug aircraft, and the effects of riding the brakes on take-off and landing were emphasised.
- **Door transparencies.** Construction of the EuroFox doors was the biggest challenge of the aircraft build, but the end result is satisfactory. The doors were fitted in accordance with the build manual with the wings unfolded and locked for flight (fuselage flexing changes the dimensions of the door apertures). The transparencies in the YGC EuroFox do not overlap and are simply retained in situ by a metal strap which is riveted to the door frame cross member. The transparencies are allowed to move across the rest of the framework with the remaining rivets fitted through oversize holes and a small clearance under the rivet heads; this should absorb any flexing of the door framework particularly during take-off and landing on a bumpy airfield. The top transparencies fitted to the YGC EuroFox have 'popped out' of their retaining straps on several occasions, and this is attributable to pilots taking off and landing with some brake applied which increases the degree of fuselage flexing

considerably. Again, pilot rebriefing has almost completely cured this problem, and the fitting of the door transparencies has been modified with a fixed overlap in later aircraft.

- Both the carb air and oil cooler flap connections in the engine bay have been damaged by being pulled/selected too hard. When the connection is broken, the oil cooler flap vibrates shut, the oil temperature rises quickly and the tow has to be abandoned before temperature limits are reached. A similar problem has occurred with the Super Cub with the carb air connection at the carburettor, and the operating cable needs replacement. None of the tug systems require damaging forces to be applied to operate them – take care!

TOST CRG SYSTEM

The cable retract and guillotine system installed in the YGC EuroFox is effective and reliable, and only a small number of issues have been noted:

- A **new** CRG rope does not feed on to the winch drum evenly during the latter stages of retraction, and hangs up under the shroud. This results in the winch motor cutting out before the rope is fully retracted, and no green retract light illuminated. The rear circumference of the winch drum is accessible from the P1 seat, and the last few feet of rope retraction can be completed by reselecting the retract switch and pushing down on the aft edge of the drum if the hang up does not clear. Once the new rope has stretched hang ups are very rare. **Landings without a green retract light illuminated should be carried out assuming that the rope is trailing behind the aircraft, remembering that there is no weak link protection at the tug end of the rope.** The problem must be investigated before further tows are carried out.
- The guillotine is very effective and easy to operate, unlike conventional releases that can be very hard to operate with tension in the rope. The 50 metre rope is relatively short in comparison to conventional ropes, and 3 metres are lost after each 'chop'. This is most noticeable from the glider end of the rope, but do not hesitate to guillotine if the tow gets dangerous!
- Tost recommend a rope change after 1000 tows. The first YGC rope exceeded that figure and was changed after approx. 1200 tows, by which time the glider end of the rope had become noticeable tired and contaminated, and the retaining knots had begun (twice) to pull through the weak link 'bullet'. Where possible a double knot with a visible tail to indicate the start of a knot failure should be used in the weak link bullet, although a single knot appears adequate with a new rope.
- The maximum rope retract speed is 75 knots; this minimises whiplash during the last few feet of the retraction process, and potential damage to the airframe. During the shakedown flying, the cleanest entries of the bullet into the funnel were observed (on video) at around 70 knots when the rope trail angle was shallowest. At low retraction speeds (>60 knots) the bullet occasionally bumps the tail wheel steering bar, and the impact can be felt through the rudder pedals.

FLYING EUROFOX

Some of the snags mentioned above have been caused by inappropriate handling techniques, and carelessness. The EuroFox does not require the same “gorilla handling” that Pawnees and Cubs need on most (windy) days at Sutton Bank, and the aircraft should be flown with ‘fingers, thumbs and toes’ even in the most turbulent conditions (just strap in properly!). Most people, particularly glider pilots, tend to brace on an aircraft’s rudder pedals when concentrating hard in difficult conditions, so try to relax and enjoy the EuroFox’s light and very effective controls – it will certainly help avoid riding the brakes and over-controlling near the ground.

The points made below may help avoid some unnecessary wear and tear on the YGC’s EuroFox tug:

- Rotax engines should be ground idled at 2500 rpm (avoiding damaging gearbox vibrations). This is about right for “taking up slack” using the brakes to control the speed. Towards the end of the pay-out you will hear the stopper rattle into the feed tube in the fuselage; try to cushion the moment the stopper arrives at the stop plate in front of the guillotine. You will feel the weight of the glider come on to the rope, and see the ‘all-out’ signal in the mirror, but pause for a moment and check that your heels are on the floor and your toes are clear of the brake pedals. When you are happy, lookout ahead, open the throttle smoothly and start the tow.
- During the climb, monitor the engine T’s and P’s during your scan cycle. If you have got airborne with the cooler flap shut the oil temperature will rise into the ‘top yellow’ after only a minute on tow. Open the flap and do your pre-take of checks properly next time (**3 knobs ‘in’ works for me**)! Ensure that the oil ‘T’ reduces towards normal within a few seconds.
- After glider release, throttle right back and retract the rope immediately. Turn off the electric fuel pump and settle into a descent at c.70 knots, a glance over your right shoulder will confirm that the winch is operating. On very cold days or when descending with the throttle completely closed, shut the oil cooler flap and select carb air hot (gently); a small amount of power during the descent keeps the engine oil temperature in the bottom yellow above 50 degrees C.
- **Keep an extra vigilant LOOKOUT during the very steep descent profiles achievable with the EuroFox.** Glider drops close to the airfield lend themselves to conflicts in the circuit as you descend. If the weather is bumpy keep the speed below the yellow ASI arc to avoid unnecessary airframe/pilot stress.
- With the rope retracted (green light on) we can land our EuroFox on the smoothest parts of the airfield directly into wind. 50 knots with full flaperon is very comfortable on ‘short finals’ but 55-60 knots on base and long final (after pre-landing checks) gives better control if it’s bumpy or landing up the hill on RW02; the speed washes off quickly during the round out and hold off, and proper 3-pointers are the order of the day.
- Keep a really good lookout ahead when taxiing. EuroFox is very quiet so weave gently to spot things hiding under the nose, and deaf people. The Tundra tyres have already

accounted for an airfield light at a local airfield, and ground collisions can be as lethal as the airborne variety!

ADMIN TRIVIA

Try to write neatly and clearly on the tug logs, and write tacho times and fuel uplifts in the appropriate spaces provided. **After flight** (before going home/to the bar) clean off the mud/bugs and **glug the oil** when the engine has cooled down somewhat; use the dedicated bucket and cloths provided in the Rotax cupboard in the workshop. Clean water is available in any tap, and does a much better job than the 'insect soup' reserved in yellow buckets for glider cleaning. In addition, there is EuroFox/Falke shampoo, polish and insect remover for the transparencies to be found in the cupboard.

Life will become easier when the tug hangar is complete.

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Tug Chaps

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