

## Preparation for first flight on the TechPro Merlin

The TechPro Merlin is a single seat SSDR manufactured in the Czech Republic where it is certified as a 300kg microlight. Prospective pilots should be familiar with the following documents:

Pilots operating handbook  
Weight and balance spreadsheet  
Aircraft checklist

In addition it is recommended that pilots intending to fly the Merlin should first get a solo sign off on a machine of similar performance i.e. CTSW or similar. Do not attempt flight unless you are fully prepared and current on similar aircraft.

The Merlin is a very quick and low drag aircraft. Initial flights will often surprise even experienced pilots. The power to weight ratio is much higher than just about any microlight and acceleration from a standstill is dramatic. Be prepared to be flying in about 2 or 3 seconds and even with steep angles of climb, the aircraft will accelerate 'uphill'. It is very easy to exceed the flap limiting speed. Climb rates of up to 1700 fpm can be achieved.

Preflight preparation of the aircraft involves ensuring there is sufficient fuel and oil onboard. The top engine cowl should be removed for the first flight of the day. The engine should be pulled through to check for hydraulic lock. For the complete list of vital checks refer to the Rotax operators manual. Make sure the pitot cover and any propellor covers are removed. Preflight airframe inspections are detailed within the POH.

First flights should only be attempted in calm weather either early in the morning or early evening. A small head wind is an advantage but do not risk cross winds to start with.

Engine start should be carried out with only one fuel tank selected. Monitor the fuel pressure and change tanks once you are sure the fuel is feeding correctly. Taxi checks include steering and braking checks. You should not use higher RPMs until the cylinder head temp is above 70 C. Magneto checks are carried out at 3800 rpm. The brakes will not hold the aircraft at full power but if it is possible to check max rpm it should be at least 5900 static.

For take off select both fuel tanks to on.

Check battery voltage minimum 13V

Check the trim is set to take off position (Normally below the neutral point)

Check magnetos are both on

Check the choke is off

Check fuel quantity

Check fuel pressure

Set flaps to 2nd stage

Check door closed and locked ( Note 2 door locks to check)

Check full and free.

Before applying full power for take off make sure you focus your attention at a point about 30 meters in front of the aircraft. This is likely to be your departure point. Do not look at the instruments as you apply power. You need to be aware that the aircraft will be accelerating fast. The aircraft has no perceptible swing on the ground but might need small rudder inputs to stay straight. Using very gentle back pressure on the stick, try and hold the nosewheel light. Do not pump the stick back and forth. Gentle back pressure is all that is needed. The aircraft will leave the ground at about 40 mph and will accelerate quickly to about 80 mph if you just hold it in the climb. The recommended technique for new pilots is to take the flap up in 2 stages as you pass 60 mph and then reduce power (if it is safe to do so) to about 5200 rpm. You can now climb at about 600 fpm at around 80 mph and get the feel of the aircraft.

As you pass 1000 ft change to the fullest tank and make a note of the time. Switching tanks every 20 minutes works well. Cruising rpm is between 5000 and 5500 with a speed range of between 95 mph and 110 mph. Fuel consumption is around 13 lit hr.

Circuits and landings are started by selecting both fuel tanks and slowing the aircraft down to 65 mph, trimming as best as possible with two stages of flap. During the circuit (and especially on the turn from base leg to final) keep the speed up. Do not let it drift below 60 mph until you are used to the aircraft. Once on final you can lower full flap and bring the speed back to 60 mph. Do not be tempted to use anything other than full flap until you have some experience on the aircraft. The Merlin is very clean and will float on without full flap. Make sure the flap lever is fully engaged - It can jump out if it is not fully home. Once over the threshold take any power off and hold off in the normal way. It is important to drive the aircraft all the way down to the ground at 60 mph. Speed can easily be lost and then a heavy landing is a risk. Try not to use braking during the landing run unless it is really needed.

The Merlin is easy to fly with light stick forces and excellent coordination and stability but please be aware that it does not fly like a typical microlight. It is a very high performance machine, very quick (low drag and laminar wing) and has relatively small control surfaces which work well at high cruise speeds but require speed control during landing to be accurate. Novice pilots should not attempt flight until they have mastered accurate speed control and precise landing judgement.