

## SECTION 9 - AIRCRAFT OPERATING INSTRUCTIONS

This chapter has been written to assist the owners, pilots and instructors of Storm Rally S-LSA, to learn how to safely and efficiently fly this aircraft in addition to the information already presented in the Pilot Operating Handbook. This section will cover most operations the aircraft offers in an order established in section Normal procedures and recommended speeds. Please consider what follows as additional yet necessary supplement to the previous chapters.

### ENGINE START-UP

**First and foremost make sure you have sufficient fuel quantity on board for the desired length of flight.** If you are not completely confident there is enough, step out of the aircraft and add more fuel into the tanks. There is an old aviators' saying: "The only time you have too much fuel is when you are on fire."

**When engaging the engine starter, wheel brakes MUST be engaged.** To keep your propeller in perfect condition, avoid starting up on areas where there are small stones on the ground. Those little stones can easily be picked up by the propellers causing damage to the blades.

**Warming up must be conducted below 2500 RPM.** When safe operational engine temperatures are reached, verify maximum engine ground RPM. Hold the stick back completely and slowly add throttle to full power, then verify RPM.

### TAXI

Taxiing with the Storm Rally S-LSA is rather simple considering the steerable nose wheel. For sharper turns on the ground you can also use the differential wheel brakes to assist yourself. It is recommended that you taxi slow, up to 10 km/s (5 kts), while holding the stick back partially to ease the pressure on the nose wheel.

During taxing monitor engine temperatures. Due to low airflow around the radiators the CHT and Oil temperature will rise during long taxi periods. If you are holding position, do not leave throttle at idle. It is recommended that you have a power setting of about 2500 RPM as this will provide some airflow from the propeller to the radiators and the temperatures will not rise quickly. **Should you see engine temperatures exceed safe operational values, shut off the engine, point the aircraft's nose into the wind and wait for the temperatures to reduce. This normally would happen at ambient temperatures of above 45 °C and long taxi or holding times.**

## TAKE OFF AND INITIAL CLIMB

Having checked and set all engine and aircraft parameters, you should be ready for takeoff. Verify again that fuel valve be open and the flaps retracted to takeoff position and Trim should be in the middle.

Start the take-off roll gradually. **Keep adding throttle slowly and smoothly to achieve full power.** There are two reasons for this. First, you change flight stage from zero movement to acceleration slowly; this provides you with time to react to conditions. Second, especially if taking-off from a gravel runway, this method of adding full throttle will prevent the little stones on the runway from damaging the propeller. Extremely short runways are an exception. There you should line up the aircraft, set flaps to takeoff position, step on the brakes, apply full power and release the brakes.

As you start to move, pull the stick 1/3 of elevator's deflection backwards to ease the pressure on the nose wheel and lift it off the runway slightly. **Do not use full back deflection as this will cause the aircraft's tail to touch the ground.**

When the nose wheel has lifted off the ground, just hold the same pitch attitude and the aircraft will become airborne. Crosswind takeoffs, depending on wind strength, require a little bit of aileron deflection into the wind. Remember, wings must stay level though out ground-roll, rotation and initial climb.

Having lifted off the ground, gently push the stick forward just a bit to accelerate.

## CLIMB

**A comfortable setting for climb is flaps in neutral position, use rpm of 5800 for first 4 minutes of climb. After which RPM slightly below 5500 should be used to climb further.** In summer time or when outside temperature exceeds 30°C you should consider 10 to 15 knots higher recommended climbing speeds to provide more airflow to the engine radiators. Trim the aircraft for comfortable stick forces.

## CRUISE

Passing through 70 knots, set flaps to zero. A comfortable cruise setting is 5300 engine RPM. As the Storm Rally is sensitive to flap settings, especially when it comes to fuel efficiency, Always use zero flaps for level flight ABOVE 70 knots.

Cruising fast, do not kick-in rudder for turns! Above 85 kts (160 km/h) the rudder becomes almost insignificant in comparison to aileron deflections when it comes to making a turn. **Cruising fast, it is extremely important to fly coordinated (ball in the middle) as this increases efficiency and decreases side-pressure onto vertical tail surfaces.** Also, pay attention to turbulence. If you hit turbulence at speeds greater than recommended maneuvering speed, reduce power immediately and pull the nose up to reduce speed.

If flying a traffic pattern, keep flaps in neutral position and set engine power so that airspeed does not exceed 150 km/h (80 knots).

## DESCENT

Descending with the Storm Rally is the stage of flight where the most care should be taken. As the aircraft is essentially clean in aerodynamic design, it is very slippery and builds up speed very fast.

Start the descent by reducing throttle and keep your speed below 65 knots, but above 55 knots.

During initial descent it is recommended you trim for a 10 kts lower speed than the one you decided to descent at. Do this for safety. In case you hit turbulence simply release forward pressure on the stick and the aircraft will slow down.

Also, keep in mind you need to begin your descent quite some time before destination. A comfortable rate of descent is 500 fpm (2.5 m/s). So it takes you some 2 minutes for a 1000 feet (300 m) drop.

Entering the traffic pattern the aircraft must be slowing down. In order to do this, hold your altitude and reduce throttle to idle. When going below 70 knots, set flaps as needed. Set proper engine RPM to maintain speed of 70 knots (130 km/h). Trim the aircraft for comfortable stick forces.

Before turning to base leg, reduce power to idle and set flaps to 10° at 60 knots (110 km/h). Once out of the turn, reduce speed towards 55 knots (100 km/h). Power remains idle from the point of turning base all the way to touch-down, unless you go below recommended speeds. If you plan your approach this way, you will always be on the safe side even if your engine fails, you will still be able to safely reach the runway!

Turn to final at 55 kts (100 km/h). When in runway heading, set flaps to full.

Maintain a 3° glide slope for landing. Observe the runway. If the runway threshold is moving up, you are dropping too fast. If the runway threshold is disappearing below your aircraft, you are dropping too slowly. It is important to keep the airspeed/pitch angle constant throughout final all the way to flare, once reached, Roundout (Flare) and touchdown.

Your speed should be a constant 55 kts (100 km/h) throughout the final with the descent path constant as well. At higher approach angles beyond 3°, speed would build up quickly, take care. At a height of 10 meters (25 feet) start a gentle flare and approach the aircraft must touch down with the main (back) wheels first, so that you will not bounce on the runway. After touchdown, operate the rudder pedals if necessary to maintain runway heading and try to have the nose wheel off the ground for as long as possible. When the nose wheel is to touch the ground, rudder pedals MUST be exactly in the middle not to cause damage to the steering mechanism. While braking and below 25 knots, hold the stick back fully! Once you have come to a standstill, retract flaps.

**Should you bounce off the runway after touch-down, do not, under any circumstances, push stick forward.**

Crosswind landings, depending on the wind speed, require some sort of drift correction. Most efficient is the low-wing method, where you are to lower the wing into the wind slightly and maintain course by applying appropriate rudder deflection. You can also try the crab method.

## **CROSSWIND LANDINGS ON PAVED RUNWAYS (asphalt, concrete, tarmac...etc)**

In this case, special attention must be paid to straightening the aircraft before touchdown in order not to damage the undercarriage because of increased surface grip on impact.

Should the crosswind component be strong (8 knots and over), it is recommended to gently flare in such a manner, that one of the main wheels touches-down an instant before the other (e.g. if there is crosswind from your left, the left wheel should touch down just before the right wheel does). This way the undercarriage almost cannot be damaged due to side forces on cross-wind landings.

## **LANDING IN STRONG TURBULENCE AND/OR GUSTY WINDS**

First of all airspeed must be increased for half of the value of wind gusts (e.g. if the wind is gusting for 6 knots , add 3 knots to the final approach speed). In such conditions, it is recommend to only use 15° of flaps for increased maneuverability. In very strong winds (20 knots and more), use neutral flaps (0°) for the complete approach and roundout.

## **PARKING**

Taxi to the apron with flaps at zero. Again, taxi slow for reasons mentioned under "Taxi". Come to a standstill, shut down the engine. It is recommended to shut fuel valve for longer parking or when parked on a slope. Engage the parking breaks. Move throttle to recommended parking position.