**LVTO-OPS**

**Reference Model: LVTO-OPS**

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| **Version** | ***1*** |
| **Description:**  *LVTO operations manual for non-commercial operations (NCO) on non-complex fixed-wing aircraft with a MTOW less than or equal to 5700 kg.* | |

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| **Number** | **Details** |
| **LVTO.OPS.100** | **Training programme** |
| **LVTO.OPS.110** | **Simulator training**  The pilot should not commence with any LVTO operations unless he is trained at least once in the previous 6 months on an FSTD simulator, being either an FNPT-II or a BITD simulator. There is no strict requirement that the simulator training has to be done together with an instructor, but each training session must be recorded in the pilot logbook.  Usually, training on an FNPT-II simulator is done together with an Instrument Rating instructor while training done on a BITD simulator is done without an instructor.  The training exercises are specified in the LVTO Training Syllabus and the pilot adheres to the syllabus when doing simulator training.  Note: According to EASA CS0FSTC(A) Certification Specifications for Aeroplane Flight Simulation Training Devices, the definition of FSTD is "‘Flight simulation training device (FSTD)’ means a training device which is: "In the case of aeroplanes, a full flight simulator (FFS), a flight training device (FTD), a flight navigation procedures trainer (FNPT), or a basic instrument training device (BITD). In the case of helicopters, a full flight simulator (FFS), a flight training device (FTD) or a flight navigation procedures trainer (FNPT)."  In addition, BITD is defined there as follows: "‘Basic instrument training device (BITD)’ means a ground-based training device which represents the student pilot’s station of a class of aeroplanes. It may use screen-based instrument panels and spring loaded flight controls, providing a training platform for at least the procedural aspects of instrument flight." |
| **LVTO.OPS.120** | **Further training requirements**  For Non-Commercial operations, no further training is required other than the standard training and prof-checks required to maintain the Instrument Rating.  If the pilot is doing any in-flight training with an Instrument Rating instructor, it is advised to practise simulated low-visibility departures with the Instrument Rating instructor in the right seat as safety pilot with clear visibility towards the runway and with the pilot using a view-limiting device to limit his forward view. If the low visibility exercise is done, it should be recorded and signed by the instructor in the pilot logbook. |
| **LVTO.OPS.200** | **Prerequisites for LVTO operations** |
| **LVTO.OPS.210** | **Limited to NCO operations < or = 5.7 tonnes**  This operations manual only covers LVTO operations in non-complex fixed wing aeroplanes with a MTOM less than or equal to 5.7 tonnes and only for non-commercial operations (NCO). |
| **LVTO.OPS.220** | **LVTO approval and limitations**  The operator has received approval for LVTO operations from the competent authorities in accordance with SPA.LVO.100 sub (a) being low visibility take-off (LVTO) operation. This manual is limited to non-commercial LVTO operations and does not cover low visibility operations (LVO) in the approach phase of flight. |
| **LVTO.OPS.230** | **Passenger consent**  Passengers will be told that Low Visibility Operations carry higher risks than normal and be given the opportunity to decline to join the flight or deplane at any time. |
| **LVTO.OPS.240** | **Visibility minima**  For a low visibility take-off (LVTO) with an aeroplane with a runway visual range (RVR) or visibility below 400 m the criteria specified the following provisions apply:  a. The absolute LVTO minimum RVR or visibility for take-off is 125 m. Even with operational credit towards a lower RVR or visibility, the resultant value shall not be lower than 125 m of RVR or visibility.  b. With runway edge lights and centre line marking (day) or runway edge lights and runway end lights OR runway centre line lights and runway end lights, the minimum RVR or visibility for an LVTO operation is 300 m.  b. With runway edge lights and centre line lights, the minimum RVR or visibility for an LVTO operation is 200 m or down to 150 m if the required RVR or visibility will be achieved for the initial part of the take-off run, the midpoint and rollout sections of the runway.  c. For an LVTO operation with an RVR below 150 m but not less than 125 m (1) high-intensity runway centre line lights spaced 15 m or less apart and high-intensity edge lights spaced 60 m or less apart must be in operation; (2) a 90 m visual segment must available from the cockpit at the start of the take-off run; and (3) the required RVR value is achieved for all of the relevant RVR reporting points (if RVR is available) related to the take-off roll.  d. Operational credit towards a lower required RVR or visibility for LVTO operations, with a credit of 1/3rd of the normally required RVR or visibility, can be received through the use of a synthetic vision and/or enhanced vision system (EVS) during the LVTO procedures. The credit will reduce the RVR or visibility of, for example, 300 m as mentioned above to 200m, but will not lower the lowered RVR or visibility requirements to any value below the absolute minimum required RVR or visibility of 125 m. |
| **LVTO.OPS.250** | **Low visibility airport procedures**  If operating from an airfield with Low Visibility Procedures, the pilot will be aware of them before starting engines. |
| **LVTO.OPS.251** | **Aerodrome without LVP procedures**  If the pilot wants to depart from an aerodrome where no low visibility procedures (LVP) are defined or used, the pilot shall perform the low visibilities procedures as specified in this manual when his pilot estimate is that the visibility is below 800 m.  As the pilot can not easily measure or estimate the visibility at or near the departure runway, he has to estimate the visibility from the parking position of the aircraft on the apron instead. |
| **LVTO.OPS.260** | **SOP usage**  If SOPs have been established, the pilot must adhere to the established SOPs during LVTO operations. |
| **LVTO.OPS.300** | **Pre-flight** |
| **LVTO.OPS.310** | **Working instruments**  As part of pre-flight and taxiing checks, the pilot will ensure that all artificial horizons and turn coordinators are working in the correct sense. If any are not working, they are to be covered, and the minimum equipment will be two working instruments, of which one is an artificial horizon. |
| **LVTO.OPS.320** | **Configure alternate**  Consider configuring a departure alternate at the end of the active flight plan in the Garmin avionics device for a quick way to activate to your take-off alternate. |
| **LVTO.OPS.400** | **Taxiing during LVO operations** |
| **LVTO.OPS.410** | **Lights**  All external lights will be switched on for taxiing and take-off. |
| **LVTO.OPS.420** | **Taxiway centrelines**  All taxiing will be exactly on taxiway centrelines. |
| **LVTO.OPS.430** | **Stop bars**  Stop bars will not be crossed under any circumstances, even with ATC clearance. |
| **LVTO.OPS.440** | **Safe-Taxi**  If Safe-Taxi is available on the aircraft panel or on a portable device, it will be used and if an EVS system is installed, it will be considered for use during taxi. |
| **LVTO.OPS.500** | **Low Visibility take-off (LVTO) operations** |
| **LVTO.OPS.510** | **Unobstructed runway**  The operator will ensure that the runway surface is clear of obstacles, whether by relying on the airfield operator’s inspection or, in the absence of an inspection, by taxiing the length of the runway within 15 minutes prior to take-off and/or with the use of an EVS system. |
| **LVTO.OPS.520** | **Radio communication**  At an uncontrolled airfield, the pilot will announce his intentions on the VHF frequency most likely to be in use by potential other users of the airfield. This will include a call immediately before applying power or releasing brakes for take-off. |
| **LVTO.OPS.530** | **Runway alignment**  The pilot will ensure that the aircraft is aligned with the middle of the runway and will check that all compasses, DGIs and HSIs are indicating the runway QDM. If a heading bug is available it will be set on the runway QDM. Before applying power, the pilot will ensure that he has identified correctly the runway edges and centreline if available. |
| **LVTO.OPS.540** | **Synthetic Vision**  If Synthetic Vision is available on the aircraft panel it will be switched on. |
| **LVTO.OPS.550** | **Clear windscreen**  Immediately before take-off, the pilot will ensure that the windscreen is clear enough of dew, mist or ice to not limit being able to view to the front on take-off. If the windscreen is not clear enough, the departure will be discontinued or delayed. |
| **LVTO.OPS.560** | **Engine monitoring**  During the take-off run, engine parameters will be monitored regularly. Any unusual signs will cause the pilot to stop immediately, where possible. In the event of an engine failure or puncture during the take-off run, the throttle(s) will be closed immediately and the aircraft kept straight using nosewheel steering. Maximum braking commensurate with not skidding will be used. |
| **LVTO.OPS.570** | **Cirrus Aircraft LVTO operations**  When the pilot is doing a take-off in a Cirrus Aircraft, the Cirrus Airframe Parachute System (CAPS) will be readily available to the pilot for deployment. The pilot will consider deployment in the take-off phase from a height above ground of 500 feet and higher. |
| **LVTO.OPS.580** | **Twin-engine Aircraft LVTO operations**  If the take-off is done in a twin-engine (piston) aircraft, the pilot will accelerate to a speed just below or around Vyse (blue line) before rotating the aircraft, clean up the gear and flaps to assure that the aircraft can climb away to at least 1500 feet AGL while still clearing obstacles by the required margins and in case of an engine failure during take-off procedure. Alternatively, the aircraft should have enough runway available to make a full stop using brakes only on the remaining runway in case of an engine failure before rotation speed. |
| **LVTO.OPS.600** | **Administrative** |
| **LVTO.OPS.610** | **Record keeping**  The operator shall keep a record of any irregularities identified while it performing LVTO operations, including steps taken or considered by the operator to prevent the irregularity from happening again. |
| **LVTO.OPS.700** | **Definitions** |
| **LVTO.OPS.710** | **Complex Aircraft**  Per Article 3 of Regulation (EC) No 216/2008 a ‘complex motor-powered aircraft’ shall  mean:  – an aeroplane:  • with a maximum certificated take-off mass exceeding 5.700 kg, or  • certificated for a maximum passenger seating configuration of more than nineteen, or  • certificated for operation with a minimum crew of at least two pilots, or  • equipped with (a) turbojet engine(s) or more than one turboprop engine, or  – a helicopter certificated:  • for a maximum take-off mass exceeding 3.175 kg, or  • for a maximum passenger seating configuration of more than nine, or  • for operation with a minimum crew of at least two pilots, or  – a tilt rotor aircraft.  The derogation to allow non-commercial operations of twin turboprop aeroplanes, with a MTOM of 5 700 kg and below, to be operated under Part-NCO (Non-Commercial Operations) rules instead of Part-NCC was published in Regulation (EU) No 2016/1199 which amends Reg. (EU) NO 965/2012. It is included in Article 6. Operators of this type of aircraft do not have to comply with Annex III Part-ORO (Organisation Requirements) of the Regulation (EU) No 965/2012 on air operations.  This operations manual is limited to be used with non-commercial operations (NCO) on non-complex fixed-wing aircraft (helicopters excluded) as per the above definition(s). |
| **LVTO.OPS.720** | **MEL**  MEL stands for Minimum Equipment List. As per NCO.GEN.155 a MEL, Minimum Equipment List, may be established but is not mandatory. For LVTO-only operations, it is assumed that the aircraft is suitable to fly under Instrument Flight Rules (IFR) and no further equipment is required. In LVTO-OPS.310, LVTO operations are prohibited when essential instruments are not working. |
| **LVTO.OPS.730** | **Continuing Airworthiness**  In accordance with AMC M.A.201 (h) 1 Responsibilities, an operator only needs to be approved for the management of the continuing airworthiness of the aircraft listed on its AOC. The approval to carry out airworthiness reviews is hereby optional. This operations manual assumes that the non-commercial operations (NCO) are not done under the responsibility of an AOC with their own fleet of aircraft. |
| **LVTO.OPS.740** | **SOP**  SOP stands for Standard Operating Procedures. In the operations manual, the SOPs refer to practical procedures established for the pilot with relation to performing LVTO operations. |