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| **PREFLIGHT CHECK – NORMAL PROCEDURE** |

**(1) CABIN**

(1) Preflight inspection…………………………………………………………………….PERFORMED

(2) Pilot ́s Operating Handbook ………………………………………………………….AVAILABLE

(3) Aircraft documents on board………………………………………………………..…CHECKED

(4) Airplane Weight and Balance Calculation…………………………………..PERFORMED

(5) Aircraft performances and fuel calculation…………………CHECKED,PERFORMED

(6) NOTAMs on flight route……………………………………………………………....…CHECKED

(7) Meteo informations on for flight route……………………………………….…..CHECKED

(8) Parking Brake ………………………………………………………………………………………….SET

(9) Control Wheel Lock ……………………………………………………………….……….REMOVE

(10) "Engine Master" ……………………………………………………………………………….….OFF

(11) Avionics Power Switch ………………………………………………………………….……. OFF

(12) "Shut-off Cabin Heat" ………………………………………..….OFF (Push Full Forward)

WARNING: When turning on the Battery switch, using an external power source, or pulling the propeller through by hand, treat the propeller as if the Engine Master was on.

(13) Battery and Main Bus switches …………………………………………………….………ON

(14) Fuel Quantity Indicators and Fuel Temperature…………………………..…. CHECK

(15) Light "Coolant Level" ……………………………………………………………..…CHECK OFF

(16) Battery and Main Bus switches …………………………………………………….……..OFF

(17) Entry in log-book concerning type of fuel filled ……………………..…….... CHECK

(18) Static Pressure Alternate Source Valve ……………………………………….…..CHECK

(19) Fuel Selector Valve ………………………………………………………………….……... BOTH

(20) Fuel Shut-off Valve ………………………………………………….……….ON (Push Full In)

(21) Baggage Door …………………………………………………………….………….. CHECK, lock

(**2) EMPENNAGE**

(1) Rudder Gust Lock (if attached) ……………………………………………………. REMOVE

(2) Tail Tie-Down………………………………………………………………………… DISCONNECT

(3) Control Surfaces ………………………CHECK freedom of movement and security

**(3) RIGHT WING Trailing Edge**

(1) Aileron …………………………………… CHECK freedom of movement and security

(2) Flap ……………………………………………………….. CHECK for security and condition

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|  **PREFLIGHT CHECK – NORMAL PROCEDURE** |

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| **PREFLIGHT CHECK – NORMAL PROCEDURE** |

**(4) RIGHT WING**

(1) Wing Tie-Down ………………………………………………………………….……… DISCONNECT

(2) Main Wheel Tire ……………………………………………………………………………………CHECK …………………………………………………………….for proper inflation and general condition

(3) Fuel Tank Sump Quick Drain Valves -……………………………………………………..DRAIN

(4) Fuel Quantity -……………………………………………………………………….CHECK VISUALLY …………………………………………………..for desired level not above marking in fuel filler

(5) Fuel Filler Cap ……………………………………………………………………………………. SECURE

**(5) NOSE**

(1) Reservoir-tank Quick Drain Valve ………………………………………………………… DRAIN (2) Before first flight of the day and after each refueling ……………….……………DRAIN the Fuel Strainer Quick Drain Valve with the sampler cup to remove water and sediment from the screen.

(3) Engine Oil Dipstick/Filler Cap:

a) Oil level ………………………………………………………………………………………………… CHECK

b) Dipstick/filler cap ………………………………………………………………………………….SECURE

(4) Engine Air and Cooling Inlets ………………………………………..CLEAR of obstructions.

(5) Landing Light …………………………………………. CHECK for condition and cleanliness

(6) Propeller and Spinner …………………………………………CHECK for nicks and security.

(7) Gearbox Oil Level …………………………………….. CHECK the oil has to cover at least

half of the inspection glass

(8) Nose Wheel Strut and Tire………………………………………CHECK for proper inflation

(9) Left Static Source Opening ……………………………………………… CHECK for stoppage

(10) Fuel cooler baffle …………………………………………………………………………………CHECK

• REMOVE, if OAT on ground in higher than 20°C

• INSTALL, if OAT on ground in lower than 20°C

**(6) LEFT WING**

(1) Fuel Quantity ……………………………………………………………………… CHECK VISUALLY for desired level not above marking in fuel filler

(2) Fuel Filler Cap -…………………………………………………………………………………….SECURE

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| **PREFLIGHT CHECK – NORMAL PROCEDURE** |

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| **PREFLIGHT CHECK – NORMAL PROCEDURE** |

(3) Fuel Tank Sump Quick Drain Valves ……………………………………………….………DRAIN

……………………………………………a cup ful of fuel (using sampler cup) from each sump

(4) Main Wheel Tire …………………………………………………………………………………. CHECK …………………………………………………………….for proper inflation and general condition

**(7) LEFT WING Leading Edge**

(1) Pitot Tube Cover (if mounted) ……………………………………………….…………. REMOVE ………………………………………………………………………………..and CHECK for pitot stoppage

(2) Fuel Tank Vent Opening ……………………….…………………………..CHECK for stoppage

(3) Stall Warning Opening ……………………………………………….…… CHECK for stoppage

(4) Wing Tie-Down ………………………………………………………………………….. DISCONNECT

**(8) LEFT WING Trailing Edge**

(1) Aileron …………………………………........ CHECK freedom of movement and security

(2) Flap ……………………………………………………………..Check for security and conditions

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| **PREFLIGHT CHECK – NORMAL PROCEDURE** |
| **PREFLIGHT CHECK – NORMAL PROCEDURE** |

**Aditional Items of Checklist „PREFLIGHT INSPECTION**“:

• Microphones, Headsets and Jacks……………………………………..……. CHECKED

• Microphones, Headsets and Jacks .……………………………………….... CLEANED

• Seats, Seat Tracks, Stops…………………………..……..………….………….. CHECKED

• Restraint System …………………………………………………………..………... CHECKED

• Portable Hand Fire Extinguisher ……………………………………..………. CHECKED

• Aileron Controls ……………………………………………………………..………. CHECKED

• Aileron Structure, Control Rods, Hinges, Balance Weights, Bellcranks, aaaaaaaLinkage, Bolts, Pulleys, and Pulley Brackets ……….……………..……. CHECKED

• Ailerons and Hinges ………………………………………………………..……….. CHECKED

• Control Wheel Lock …………………………………………………………………. CHECKED

• Rudder, Tips, Hinges, Stops, Clips and Cable Attachment ….……. CHECKED

• Rudder Control ………………………………………………………….……………. CHECKED

• Elevator Control ……………………………………………………………………... CHECKED

• Elevator, Hinges, Stops, and Cable Attachment ………………………. CHECKED

• Elevator Trim Tab and Hinges …………………………………………………. CHECKED

• Fuel System ……………………………………………………………….……………. CHECKED

• Fuel Selector Valve …………………………………………….……………..……. CHECKED

• Fuel Reservoir …………………………………………………….…………….……. CHECKED

• Fuel Selector ……………………………………………………….……….…………. CHECKED

• Instruments ……………………………………………………….……….….………. CHECKED

• Instrument and Cabin Lights ……………………………….….….………..…. CHECKED

• Navigation, Beacon, Strobe, and Landing Lights ..…….….……...…. CHECKED

• Pitot Tube and Stall Warning System ………………………………...…… CHECKED

• Magnetic Compass ………………………………………………………….……... CHECKED

• Avionics Operating Controls ………………………………….…….…………. CHECKED

• Navigation Indicators, Controls, and Components ……….………… CHECKED

• Navigation Antennas and Cables …………………….……………………... CHECKED

• Doors ………………………………………………………….………….………………. CHECKED

• Fuselage Surface …………………………………………………….………………. CHECKED

• Vertical Stabilizer Fin and Tailcone ………………………………….……… CHECKED

• Windows and Windshield ………………………………………………………. CHECKED

• Wing Surfaces and Tips ……………………………………….…………………. CHECKED

• Wing Struts and Strut Fairings ………………………………………….……. CHECKED

• Cowling ……………………………………………….……………………………..…. CHECKED

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| **BEFORE STARTING ENGINE – NORMAL PROCEDURE** |

 (1) Preflight Inspection -………………………………………………………………………..COMPLETE

(2) Seats and Seat Belts ……………………………………………………………..ADJUST and LOCK

(3) Brakes ………………………………………………………………………………………… TEST and SET

(4) Avionics Power Switch, Autopilot and Electrical Equipment ……………………...OFF

CAUTION: The Avionics Power Switch must be off during engine start to prevent possible damage to avionics.

(5) Circuit Breakers …………………………………………………………………………………CHECK IN

(6) Switch Alternator …………………………………………………………………………….CHECK ON

(7) Battery and Main Bus Switches ……………………………………………………………………ON

CAUTION: The electronic engine control needs an electrical power source for its operation. For normal operation Battery, Alternator and Main Bus have to be switched on. Separat teswitching is only allowed for tests and in the event of emergencies.

(8) Fuel Quantity and Temperature …………………………………………………………….CHECK

(9) Fuel Selector Valve -……………………………………………………………………. SET to BOTH ……………………………….................The fuel temperature limitations must be observed

(10) Fuel Shut-off Valve …………………………………………………………. OPEN (Push Full In)

(11) Alternate Air Door ……………………………………………………………………………. CLOSED

(12) Thrust Lever …………………………………………….. CHECK for freedom of movement

(13) Load Display …………………………………………………….CHECK 0% at Propeller RPM 0

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|  **BEFORE STARTING ENGINE – NORMAL PROCEDURE** |
| **STARTING ENGINE – NORMAL PROCEDURE** |

WARNING: Do not use ground power unit for engine starts. It is not allowed to start up the engine using external power. If starting the engine is not possible using battery power, the condition of the battery must be verified before flight.

(1) Electric Fuel Pump ………………………………………………………………………………..….. ON

(2) Thrust Lever -……………………………………………………………………………………………..IDLE

(3) Area Aircraft / Propeller………………………………………………………………………….CLEAR

(4) "Engine Master" ………………………………………………………………………………………….ON ……………………………………………………….wait until the Glow Control light extinguishes

(5) Starter …………………………………………………………………………………………………………ON **keep starter engaged until min. 500 rpm. Release when engine starts,**

 **Leave Thrust Lever in idle**

(6) Oil Pressure …………………………………………………………………………………………. CHECK

**CAUTION: If after 3 seconds the minimum oil pressure of 1 bar is not indicated:**

**shut down the engine immediately!**

(7) CED - Test Knob ………………………………………………..PRESS (to delete Caution light)

(8) Ammeter ………………………………………………….CHECK for positive charging current

(9) Voltmeter ……………………………………………………………………..CHECK for green range

(10) FADEC Backup Battery test - Alternator …………………………………………….……..OFF ……………………………………………………………………………….engine must operate normally

(11) FADEC Backup Battery test - Battery Bus ……………………………………..………… OFF

for min. 10 seconds; engine must operate normally, the red FADEC lamps must not be illuminated

(12) FADEC Backup Battery test - Battery Bus …………………………………………………ON

(13) FADEC Backup Battery test - Alternator …………………………………………………..ON

(14) MAIN BUS SWITCH…………………………………………………………………………………….ON

**WARNING: It must be ensured that both Battery Bus and Alernator are ON!**

(15) Navigation Lights and Flashing Beacon ………………………………. ON (as required)

(16) PFD – Primary flight Display…………………………….…………………………………….....ON

(17) MFD – Multi function Display…………………………………………………………………….ON

(18) AVIONICS SWITCH……………………………………………………………………………………..ON

(19) Ammeter ……………………………………………………………………………………………..CHECK

 ………………………………………….positive charge, alternator warning light must be OFF

(20) Voltmeter………………………………………………………………….. CHECK in green range

(21) Electric Fuel Pump …………………………………………………………………………………. OFF

(17) Flaps ………………………………………………………………………………………………. RETRACT

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| **5 – STARTING ENGINE – NORMAL PROCEDURE** |
| **WARM UP – NORMAL PROCEDURE** |

(1) Let the engine warm up about 2 minutes at 890 RPM.

(2) Increase RPM to 1,400 until Oil Temperature 50°C (122°F),

 Coolant Temperature 60°C (140°F).

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| **BEFORE TAKE OFF – NORMAL PROCEDURE** |

(1) Parking Brake ……………………………………………………………………………………………. SET

(2) Cabin Doors and Windows ……………………………………………… CLOSED and LOCKED

(3) Flight Controls ………………………………………………………………….. FREE and CORRECT

(4) Flight Instruments …………………………………………………………………… CHECK and SET

(5) Fuel quantity ………………………………………………………………………………………….CHECK

(6) Fuel Selector Valve ……………………………………………………………………… SET to BOTH

(7) Elevator Trim ……………………………………………………………………………SET for Take off

**(8) FADEC and propeller adjustment function check:**

a) Thrust Lever …………………………………………IDLE (both FADEC lights should be OFF)

b) FADEC Test Button ……………………………… PRESS and HOLD button for entire test

c) Both FADEC lights - ON, RPM increases.

**WARNING: If the FADEC lights do not come on at this point, it means that the test procedure has failed and take off should not be attempted**

d) The FADEC automatically switches to B-component ….(only FADEC B light is ON)

e) The propeller control is excited, RPM decreases

f) The FADEC automatically switches to channel A………...(only FADEC A light is ON) ….RPM increases

g) The propeller control is excited, RPM decreases

h) FADEC A light goes OFF, idle RPM is reached, the test is completed.

i) FADEC Test Button ………………………………………………………………………………..RELEASE

j) Force B Switch …………………………………………………………………….. switch to FADEC B

k) Engine ……………………………………………………………. check running without a change

l) Force B Switch …………………………………………………………….switch back to Automatic

**WARNING: If there are prolonged engine misfires or the engine shuts down during the test, take off may not be attempted.**

**WARNING: The whole test procedure has to be performed without any failure. In case the engine shuts down or the FADEC lights are flashing, take off is prohibited. This applies even if the engine seems to run without failure after the test.**

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| **6 – BEFORE TAKE OFF – NORMAL PROCEDURE** |
| **BEFORE TAKE OFF – NORMAL PROCEDURE** |

Note: If the test button is released before the self test is over, the FADEC immediately switches over to normal operation.

Note: While switching from one FADEC to annother it is normal to hear and feel a

momentary surge in the engine.

(9) Thrust Lever ………………………………………..FULL FORWARD, load display min. 94%

………………………………………………………………....RPM 2240 - 2300

(10) Thrust Lever ………………………………………………………………………………………….. IDLE

(11) Engine Instruments and Ammeter ……………………………………………………… CHECK

(12) Suction gage ----------------------------------------------------------------------------CHECK

(13) Wing Flaps …………………………………………………………..SET for Take-off ( 0° or 10°)

(14) Electric Fuel Pump …………………………………………………………………………………… ON

(15) Strobe Lights ………………………………………………………………………………. AS DESIRED

(16) Radios and Avionics ……………………………………………………………………. ON and SET

(17) Autopilot ……………………………CHECK AUTOPILOT CHECKLIST!………………..… OFF

(18) Thrust Lever Friction Control ………………………………………………………………ADJUST

(19) Brakes ……………………………………………………………………………………………….RELEASE

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| **TAKE OFF – NORMAL PROCEDURE** |

**NORMAL TAKE OFF**

(1) Wing Flaps ……………………………………………………………………………………….. 0° or 10°

(2) Thrust Lever …………………………………………………………………………..FULL FORWARD

(3) Elevator Control …………………………………………………LIFT NOSE WHEEL at 55 KIAS.

(4) Climb Speed ……………………………………………………………………………….65 to 80 KIAS

**SHORT FIELD TAKE OFF**

(1) Wing Flaps ………………………………………………………………………………………………….10°

(2) Brakes …………………………………………………………………………………………………..APPLY

(3) Thrust Lever ………………………………………………………………………….FULL FORWARD

(4) Brakes ………………………………………………………………………………………………..RELEASE

(5) Airplane Attitude …………………………………………………………….SLIGHTLY TAIL LOW

(6) Elevator Control ……………………………………………….. LIFT NOSE WHEEL at 44 KIAS

(7) Climb Speed ……………………………………….58 KIAS (until all obstacles are cleared)

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| **7 – TAKE OFF - NORMAL PROCEDURE** |
| **AFTER TAKE OFF – NORMAL PROCEDURE** |

**AFTER TAKEOFF**

(1) Altitude about 300 ft, Airspeed more than 65 KIAS ………. Wing Flaps - RETRACT

(2) Electric Fuel Pump ………………………………………………………………………………...…..OFF

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| **CLIMB – NORMAL PROCEDURE** |

**CLIMB**

(1) Airspeed ……………………………………………………………………………………. 70 to 85 KIAS

(2) Thrust Lever ………………………………………………………………………….. FULL FORWARD

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| **CRUISE – NORMAL PROCEDURE** |

**CRUISE**

(1) Power ………………………………..maximum load 85%, 75% or less is recommended

………………………………………………………………For economic cruise set load 70% or less.

(2) Elevator trim …………………………………………………………………………………….. ADJUST

(3) Compliance with Limits for Oil Pressure, Oil Temperature, Coolant Temperature and Gearbox Temperature (CED 125 and Caution light) ……………………………………………………………………………………………. MONITOR constantly

(4) Fuel Quantity and Temperature (Display and LOW LEVEL caution lights) ………………………………………………………………………………………………………………MONITOR.

(5) FADEC and Alternator Warning lights - MONITOR

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| **8 – CRUISE – NORMAL PROCEDURE** |
| **DESCENT – NORMAL PROCEDURE** |

**DESCENT**

(1) Fuel Selector Valve ………………………………………………………..SELECT BOTH position

(2) Power …………………………………………………………………………………………… AS DESIRED

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| **BEFORE LANDING – NORMAL PROCEDURE** |

**BEFORE LANDING**

(1) Pilot and Passenger Seat Backs ……………………………….MOST UPRIGHT POSITION

(2) Seats and Seat Belts ……………………………………………………. SECURED and LOCKED

(3) Fuel Selector Valve ………………………………………………………..SELECT BOTH position

(4) Electric Fuel Pump ………………………………………………………………………………………ON

(5) Landing / Taxi Lights …………………………………………………………………………………. ON

(6) Autopilot …………………………………………………………………………………………………. OFF

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| **LANDING – NORMAL PROCEDURE** |

**NORMAL LANDING**

(1) Airspeed ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, 69 to 80 KIAS (wing flaps UP)

(2) Wing Flaps AS DESIRED ,,,,,,,,,,,,(0°-10° below 110 KIAS; 10°-Full below 85 KIAS)

(3) Airspeed in Final Approach:

 - wing flaps 0°- 10°: 70 KIAS

 - wing flaps 20°: 63 KIAS

 - wing flaps 30°: 60 KIAS

(4) Touchdown …………………………………………………………………….. MAIN WHEELS FIRST

(5) Landing Roll ……………………………………………………….LOWER NOSE WHEEL GENTLY

(6) Brakes ……………………………………………………………………………MINIMUM REQUIRED

**SHORT FIELD LANDING**

(1) Airspeed ……………………………………………………………………..69 to 80 KIAS (Flaps UP)

(2) Wing Flaps - 40°

(3) Airspeed in the Final Approach ………………………………………….60 KIAS (until flare)

(4) Power ……………………………………………….. REDUCE to idle after clearing obstacles.

(5) Touchdown …………………………………………………………………….. MAIN WHEELS FIRST

(6) Brakes ………………………………………………………………………………………APPLY HEAVILY

(7) Wing Flaps ………………………………………………………………………………………….RETRACT

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| **9 – LANDING – NORMAL PROCEDURE** |
| **LANDING – NORMAL PROCEDURE** |

 **BALKED LANDING**

(1) Thrust Lever……………………………………………………………………………. FULL FORWARD

(2) Wing Flaps -…………………………………………………………………………… RETRACT TO 20° ………………………………………………….(immediately after Thrust Lever FULL FORWARD)

(3) Climb Speed …………………………………………………………………………………………58 KIAS

(4) Wing Flaps …………………………………………………10° (until all obstacles are cleared)

(5) Wing Flaps ………………………..RETRACT after reaching a safe altitude and 65 KIAS

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| **AFTER LANDING – NORMAL PROCEDURE** |

**AFTER LANDING**

(1) Wing Flaps ………………………………………………………………………………………….RETRACT

(2) Electric Fuel Pump ……………………………………………………………………………………..OFF

**SECURING AIRPLANE**

(1) Parking Brake ……………………………………………………………………………………………. SET

(2) Thrust Lever ………………………………………………………………………………………………IDLE

(3) Avionics Power Switch, PFD, MFD, Electrical Equipment, Autopilot…………. OFF

(4) Main Bus Switch …………………………………………………………………………………………OFF

(5) "Engine Master" ………………………………………………………………………………………. OFF (6) Battery Bus Switch …………………………………………………………………………………… OFF

(7) Control Lock ………………………………………………………………………………………. INSTALL

(8) Fuel Selector Valve ………………………………………………………………….. LEFT or RIGHT ……………………………………………………………….(to prevent crossfeeding between tanks)

(9) Pitot Cover………….……………………………………………………………………………………….ON

**NOTE!**

* **Tie down aircraft with the ropes, put the choks infront main wheel**
* **– if necessary**
* **Lock the aircraft – I necessary**
* **Do not leave the headsets on Instrument panel glareshield**

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| **10 – AFTER LANDING – NORMAL PROCEDURE** |
| **ENGINE MALFUNCTION**  |

**DURING TAKE-OFF (WITH SUFFICENT RUNWAY AHEAD)**

(1) Thrust Lever ………………………………………………………………………………………………IDLE

(2) Brakes …………………………………………………………………………………………………….APPLY

(3) Wing flaps (if extended)………………………………………………………………………RETRACT …………………………………………………………to increase the braking effect on the runway

(4) Engine Master ………………………………………………………………………………………….. OFF

(5) Alternator, Main Bus and Battery switch ……………………………………………………OFF

**IMMEDIATELY AFTER TAKE-OFF**

WARNING: Altitude and airspeed are seldom sufficient for a return to the airfield with a 180° turn!

**while gliding:**

(1) Airspeed............................................................... 65 KIAS (wing flaps retracted)

 ...................................................................................60 KIAS (wing flaps extended)

(2) Fuel Shut-off Valve ……………………………………………………………………………. CLOSED

(3) Engine Master …………………………………………………………………………………………. OFF

(4) Wing flaps ………………………………………….. as required (Full down recommended)

(5) Alternator, Main Bus and Battery switch …………………………………………………. OFF

**DURING FLIGHT**

Note: Running a tank dry activates both FADEC In case that one fuel tank was flown empty, at the first signs of insufficient fuel feed proceed as follows:

(1) Fuel Shut-off Valve ……………………………………………………………. OPEN (push full in)

(2) Immediately switch the Fuel Selector to………………………………….. BOTH position

(3) Electric Fuel Pump ………………………………………………………………………………………ON

(4) Check the engine (engine parameters, airspeed/altitude change, whether the engine responds to changes in the Thrust Lever position).

(5) If the engine acts normally, continue the flight and land as soon as practical.

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| **1 - ENGINE MALFUNCTION** |
| **ENGINE MALFUNCTION** |

**RESTART AFTER ENGINE FAILURE**

(1) Airspeed …………………………………………………………………….between 65 and 85 KIAS

(2) Glide ………………………………………………………………………………………..below 13,000 ft

(3) Fuel Shut-off Valve ……………………………………………………………. OPEN (push full in)

(4) Fuel Selector Valve……. ………………………………………………………………BOTH position

(5) Electric Fuel Pump ………………………………………………………………………………………ON

(6) Thrust Lever ……………………………………………………………………………………………. IDLE

(7) Engine Master……………………………………………………………………… OFF and then ON …………………………………(if the propeller does not turn, then additionally Starter ON)

(8) Check the engine power……………………………………………………….Thrust lever 100% ……………………………………………………engine parameters, check altitude and airspeed

**FADEC MALFUNCTION IN FLIGHT**

**a) One FADEC Light is flashing**

1. Press FADEC-Test knob at least 2 seconds

2. FADEC Light extinguished (LOW category warning):

a) Continue flight normally

b) Inform service center after landing

3. FADEC Light illuminated steady (HIGH category warning)

a) Observe the other FADEC light

b) Land as soon as practical

c) Select an airspeed to avoid engine overspeed

d) Inform service center after landing

**b) Both FADEC Lights are flashing**

1. Press FADEC-Test knob at least 2 seconds

2. FADEC Lights extinguished (LOW category warning):

a) Continue flight normally

b) Inform service center after landing

3. FADEC Lights illuminated steady (HIGH category warning):

a) Check the available engine power

b) Expect engine failure

c) Flight can be continued, however the pilot should

i) Select an appropriate airspeed to avoid engine overspeed.

ii) Land as soon as possible

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| **2 - ENGINE MALFUNCTION** |
| **ENGINE MALFUNCTION** |

CONTINUED…..

iii) Be prepared for an emergency landing

d) Inform service center after landing

4. **In case a fuel tank was flown empty**, proceed at the first signs of insufficient fuel feed as follows:

a) Immediately switch the Fuel Selector ………………………………………………..…… BOTH

b) Electric Fuel Pump ………………………………………………………………………………………..ON

c) Select an airspeed to avoid engine overspeed.

d) Check the engine (engine parameters, airspeed/altitude change, whether the engine responds to changes in the Thrust Lever position).

e) If the engine acts normally, continue the flight and land as soon as practical.

**ABNORMAL ENGINE BEHAVIOR**

If the engine acts abnormal during flight and the system does not automatically switch to the B-FADEC, it is possible switch to the B-FADEC manually.

(1)..Select an appropriate airspeed to avoid engine overspeed

**WARNING: When operating on FADEC backup battery only, the "Force B" switch must not be activated. This will shut down the engine.**

(2) "FORCE-B"…………………………………………………………………………. switch to B-FADEC

(3) Flight may be continued, but the pilot should:

i) Select an airspeed to avoid engine overspeed

ii) Land as soon as practical

iii) Be prepared for an emergency landing

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| **3 - ABNORMAL ENGINE BEHAVIOR** |
| **ENGINE FIRE** |

**ENGINE FIRE WHEN STARTING ENGINE ON GROUND**

(1) Engine Master ……………………………………………………………………………………………OFF

(2) Fuel Shut-off Valve ……………………………………………………………………………. CLOSED

(3) Electric Fuel Pump ……………………………………………………………………………………..OFF

(4) Switch "Battery" …………………………………………………………………………………………OFF

(5) Extinguish the flames with a fire extinguisher, wool blankets or sand.

(6) Examine the fire damages thoroughly and repair or replace the damaged parts before the next flight

**ENGINE FIRE IN FLIGHT**

(1) Engine Master …………………………………………………………………………………………..OFF

(2) Fuel Shut-off Valve ……………………………………………………………………………..CLOSED

(3) Select an airspeed to avoid engine overspeed

(4) Electric Fuel Pump ………………………………………………………………………………….. OFF

(5) Switch "Main Bus" ………………………………………………………………………………….. OFF

(6) Cabin heat and ventilation ……………………………………………………OFF resp. CLOSE …………………………………………………………(except the fresh air nozzles on the ceiling)

(7) Perform emergency landing

----------------(as described in the procedure"Emergency Landing With Engine Out")

**ELECTRICAL FIRE IN FLIGHT**

The first sign of an electrical fire is the smell of burned cable insulation. In this event proceed as follows:

1) Main Bus ……………………………………………………………………………………………………..OFF

(2) Avionics Master ………………………………………………………………………………………….OFF

(3) Fresh air nozzles, Cabin Heat and Ventilation ……………………………….OFF (closed)

(4) Fire Extinguisher ……………………………………………………………. Activate (if available)

(5) All electrical consumers ………………………………………………………………….Switch OFF …………………………………………………...leave Alternator, battery and Engine Master ON

(6) If there is evidence of continued electrical fire, consider turning off Battery and Alternator.

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| **4- ENGINE FIRE** |

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| **ENGINE FIRE** |

CONTINUED…..

(7) Fresh Air Nozzles, Cabin Heat and Ventilation …………………………………ON (open)

(8) Check Circuit Breakers, do not reset if open

If the fire has been extinguished:

(9) Main Bus …………………………………………………………………………………………………….ON

(10) Avionics Master ………………………………………………………………………………………..ON

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| **ENGINE SHUT DOWN IN FLIGHT** |

(1) Select an airspeed to avoid engine overspeed ………(best glide recommended)

(2) Engine Master …………………………………………………………………………………………..OFF

(3) Fuel Shut-off Valve ………………………………………………………………………………CLOSED

(4) Electric Fuel Pump ………………………………………………………………………………….. OFF

(5) If the propeller also has to be stopped (for instance, due to excessive vibrations)

i) Reduce airspeed below 55 KIAS

ii) When the propeller is stopped, continue to glide at 65 KIAS

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| **EMERGENCY LANDING** |

**EMERGENCY LANDING WITH ENGINE OUT**

If all attempts to restart the engine fail and an emergency landing is immanent, select suitable site and proceed as follows:

(1) Airspeed

…………………………………………………………………………………..…i) 65 KIAS (flaps retracted)

…………………………………………………………………………………….ii) 60 KIAS (flaps extended)

(2) Fuel Shut-off Valve ………………………………………………………………………………CLOSED

(3) Engine Master ………………………………………………………………………………………….. OFF

(4) Wing Flaps -………………………………………….as required (Full down recommended)

(5) Alternator,Main Bus and Battery switch ………………………………………………….. OFF

(6) Cabin Doors ……………………………………………………………unlock before touch-down

(7) Touch-down ………………………………………………………………slightly nose up attitude

(8) Brake firmly

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| **5 - EMERGENCY LANDING** |

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| **FLIGHT IN ICING CONDITIONS** |

WARNING: It is prohibited to fly in known icing In case of inadvertent icing encounter proceed as follows:

1. Pitot Heat switch …………………………………………………………………………………ON

1. Turn back or change the altitude to obtain an outside air temperature that is less conducive to icing
2. Pull the cabin heat control full out and open defroster outlets to obtain maximum windshield defroster airflow. Adjust cabin air control to get maximum defroster heat and airflow.
3. Advance the Thrust Lever to increase the propeller speed and keep ice accumulation on the propeller blades as low as possible.
4. Watch for signs of air filter icing and pull the "Alternate Air Door" control if necessary. An unexplaned loss in engine power could be caused by ice blocking the air intake filter. Opening the "Alternate Air Door" allows preheated air from the engine compartment to be aspirated.
5. Plan a landing at the nearest airfield. With an extremely rapid ice build up, select a suitable "off airfield" landing site.
6. With an ice accumulation of 0.5 cm or more on the wing leading edges, a significantly higher stall speed should be expected.
7. Leave wing flaps retracted. With a severe ice build up on the horizontal tail, the change in wing wake airflow direction caused by wing flap extension could result in a loss of elevator effectiveness.
8. Perform a landing approach using a forward slip, if necessary, for improved visibility.
9. Approach at 65 to 75 KIAS depending upon the amount of the accumulation.
10. Perform a landing in level attitude conditions.

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| **6 - FLIGHT IN ICING CONDITIONS** |
|  **RECOVERY FROM SPIRAL DIVE** |

(1) Retard Thrust Lever to idle position

(2) Stop the turn by using coordinated aileron and rudder control to align the symbolic airplane in the turn coordinator with the horizontal reference line.

(3) Cautiously apply elevator back pressure to slowly reduce the airspeed to 80 KIAS.

(4) Adjust the elevator trim control to maintain an 80 KIAS glide.

(5) Keep hands off the control wheel, using rudder control to hold a straight heading.

(6) Readjust the rudder trim (if installed) to relieve the rudder of asymmetric forces.

(7) Clear the engine occasionally, but avoid using enough power to disturb the trimmed glide.

(8) Upon breaking out of clouds, resume normal cruising flight and continue the flight.

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| **7 - RECOVERY FROM SPIRAL DIVE** |
| **ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS** |

CAUTION: The TAE 125-02-114 requires an electrical power source for its operation. **If the alternator fails**, continued engine operation time is dependant upon the remaining capacity of the main battery, the FADEC backup battery and equipment powered. The engine has been demonstrated to continue operating for approximately 120 minutes based upon the following assumptions:



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| **8 - ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS** |

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| **ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS** |

CONTINEUD…..

WARNING If the power supply from both alternator and main battery is interrupted, continued engine operation is dependent on the remaining capacity of the FADEC backup battery. The engine has been demonstrated to continue operating for a maximum of 30 minutes when powered by the FADEC

backup battery only. In this case, all electrical equipment will not operate:

- land as soon as possible

- do not switch the "FORCE-B“ switch, this will shut down the engine

- pilot should turn off all nonessential items and supply power only to equipment which is absolutely necessary for continued flight depending upon the situation.

If deviated from this recommendation, the emaining engine operating time may

change.

**ALTERNATOR WARNING LIGHT ILLUMINATES DURING**

**NORMAL ENGINE OPERATION.**

(1) Ammeter …………………………………………………………………………………………… CHECK.

(2) Alternator switch………………………………………………………………………….CHECK - ON

(3) Battery Switch…………………………………………………………………………….. CHECK - ON

CAUTION

If the FADEC was supplied by battery only until this point, the RPM can momentarily drop, when the alternator will be switched on. In any case: leave the alternator switched ON!

4) Electrical load - REDUCE IMMEDIATELY as follows:

i) NAV/ COM 2………………………………………………………………………………………………….OFF

ii) Fuel Pump …………………………………………………………………………………………………..OFF

iii) Landing Light ………………………………………………..OFF (use as required for landing)

iv) Taxi Light …………………………………………………………………………………………………….OFF

v) Strobe Light………………………………………………………………………………………………….OFF

vi) Nav Lights……………………………………………………………………………………………………OFF

vii) Beacon ………………………………………………………………………………………………………OFF

viii)Interior Lights ------------------------------------------------------------------------------OFF

ix) Intercom ………………………………………………………………………………………………….. OFF

x) Pitot Heat …………………………………………………………………………OFF (use as required)

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| **9 - ALTERNATOR WARNING LIGHT** |

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| **ALTERNATOR WARNING LIGHT** |

CONTINUED….

xi) Autopilot……………………………………………………………………………………………………..OFF

xii) Non-essential equipment …………………………………………………………………………..OFF

(5) The pilot should:

i) Land as soon as practical.

ii) Be prepared for an emergency landing.

iii) Expect an engine failure.

**AMMETER SHOWS BATTERY DISCHARGE DURING NORMAL ENGINE OPERATION FOR MORE THAN 5 MINUTES**

Note: When the AED Ammeter indication decreases to the far left and the voltage indication is decreasing simultaneously, the battery is being discharged.

(1) Alternator switch ………………………………………………………………………….CHECK - ON

(2) Battery Switch……………………………………………………………………………….CHECK - ON

 CAUTION If the FADEC was supplied by battery only until this point, the RPM can momentarily drop, when the alternator will be switched on. In any case: leave the alternator switched ON!

(3) Electrical load - REDUCE IMMEDIATELY as follows:

i) NAV/ COM 2 …………………………………………………………………………………………………OFF

ii) Fuel Pump………………………………………………………………………………………………….. OFF

iii) Landing Light ………………………………………………..OFF (use as required for landing)

iv) Taxi Light……………………………………………………………………………………………………..OFF

v) Strobe Light …………………………………………………………………………………………………OFF

vi) Nav Lights ------------------------------------------------------------------------------------OFF

vii) Beacon ………………………………………………………………………………………………………OFF

viii)Interior Lights …………………………………………………………………………………………….OFF

ix) Intercom …………………………………………………………………………………………………….OFF

x) Pitot Heat ………………………………………………………………………..OFF (use as required)

xi) Autopilot …………………………………………………………………………………………………….OFF

xii) Non-essential equipment …………………………………………………………………………..OFF

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| **10 - BATTERY DISCHARGE FOR MORE THAN 5 MINUTES** |

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| **BATTERY DISCHARGE FOR MORE THAN 5 MINUTES** |

CONTINUED…

(4) The pilot should:

i) Land as soon as practical

ii) Be prepared for an emergency landing

iii) Expect an engine failure

**TOTAL ELECTRICAL FAILURE**

(all equipment inoperative, except engine)

WARNING: If the power supply from both alternator and main battery is interrupted simultaneously,continued engine operation is dependent on the remaining capacity of the FADEC backup battery. The engine has been

demonstrated to continue operating for amaximum of 30 minutes when powered by the FADEC backup battery only. In this case, all other electrical equipment will not operate.

WARNING: If the aircraft was operated on battery power only until this point (alternator warning light illuminated), the remaining engine operating time may be less than 30 minutes.

WARNING: Do not activate the FORCE-B switch, this will shut down the engine.

(1) Alternator switch………………………………………………………………………….CHECK - ON

(2) Battery Switch……………………………………………………………………………..CHECK – ON

(3) Land as soon as possible

i) Be prepared for an emergency landing

ii) Expect an engine failure

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| **11 - TOTAL ELECTRICAL FAILURE** |

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| **ROUGH ENGINE OPERATION OR LOSS OF POWER** |

**DECREASE IN POWER**

(1) Push Thrust Lever……………………………………………. full forward (Take-off position)

(2) Fuel Selector …………………………………………………………………………… BOTH Position.

(3) Electric Fuel Pump ………………………………………………………………………………………ON

(4) Reduce airspeed ……………………………………………………………………………..65-85 KIAS …………………………………………………………..(best glide recommended), (max. 100 KIAS)

(5) Check engine parameters (FADEC lights, oil pressure and temperature, fuel quantity)

If normal engine power is not achieved, the pilot should:

i) Land as soon as practical

ii) Be prepared for an emergency landing

iii) Expect an engine failure

**OIL PRESSURE TOO LOW (< 2.3 BAR IN CRUISE (AMBERRANGE) OR < 1.2 BAR AT IDLE (RED RANGE)):**

(1) Reduce power …………………………………………………………………as quickly as possible

(2) Check oil temperature…...If the oil temperature is high or near operating limits

i) Land as soon as possible

ii) Be prepared for an emergency landing

iii) Expect an engine failure

(3) Increase the climbing airspeed reduce angle of climb

(4) Reduce power, if the engine temperatures approach the red range

**OIL TEMPERATURE "OT" TOO HIGH (RED RANGE):**

(1) Increase airspeed and reduce power as quickly as possible

(2) Check oil pressure: if the oil pressure is lower than normal

(< 2.3 bar in cruise or < 1.2 bar at idle),

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| **12 - OIL TEMPERATURE "OT" TOO HIGH (RED RANGE):****OIL TEMPERATURE "OT" TOO HIGH (RED RANGE):** |

CONTINUED…..

(3) If the oil pressure is in the normal range:

i) Land as soon as possible

ii) Be prepared for an emergency landing

iii) Expect an engine failure

i) Land as soon as practical

**COOLANT TEMPERATURE "CT" TOO HIGH (RED RANGE):**

(1) Increase airspeed and reduce power as quickly as possible

(2) Cabin Heat ……………………………………………………………………………………………….COLD

(3) If coolant temperature reduces rapidly to normal range, continue to fly normally and monitor coolant temperature,

(4) If coolant temperature does not decrease,

i) Land as soon as practical

ii) Be prepared for an emergency landing

iii) Expect an engine failure

**LIGHT "WATER LEVEL" ILLUMINATES**

(1) Increase airspeed and reduce power as quickly as possible

(2) Coolant temperature "CT" check and observe

(3) Oil temperature "OT" check and observe

(4) If coolant temperature and/or oil temperature are rising into amber or red range,

i) Land as soon as practical

ii) Be prepared for an emergency landing

iii) Expect an engine failure

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| **13 - LIGHT "WATER LEVEL" ILLUMINATES** |
| **GEARBOX TEMPERATURE "GT" TOO HIGH (RED RANGE):** |

(1) Reduce power ………………………………………………55% - 75% as quickly as possible

(2) Land as soon as practical

**FUEL TEMPERATURE TOO HIGH (RED RANGE):**

(1) Switch to fuel tank with lower fuel temperature, if this contains sufficient fuel

(2) Reduce engine power, if possible

(3) If fuel temperature remains in Red Range, land as soon as possible

**FUEL TEMPERATURE TOO LOW (AMBER RANGE for Diesel Operation, RED RANGE for Kerosine Operation)**

(1) Switch to fuel tank with higher fuel temperature, if this contains sufficient fuel

(2) Change to altitude with higher outside air temperature

(3) If use of the non-active tank is intended, switch fuel selector to BOTH

Note: Low fuel temperature may be caused when flying in cold weather with fuel cooler in operation (baffle removed).

**PROPELLER RPM TOO HIGH**

With propeller RPM between 2,400 and 2,500 for more than 10 seconds or over 2,500:

(1) Reduce power

(2) Reduce airspeed below 100 KIAS or as appropriate to prevent propeller overspeed

(3) Set power as required to maintain altitude and land as soon as practical.

Note: If the propeller speed control fails, climbs be performed at 65 KIAS and a power setting of 100%.

In case of overspeed the FADEC will reduce the engine power at higher airspeeds to avoid propeller speeds above 2500 rpm.

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| **14 - PROPELLER RPM TOO HIGH****FLUCTUATIONS IN PROPELLER RPM** |

If the propeller RPM fluctuates by more than + / - 100 RPM with a constant Thrust Lever position:

1. Change the power setting and attempt to find a power setting where the propeller RPM no longer fluctuates.
2. If this does not work, set the maximum power at an airspeed < 100 KIAS until the propeller speed stabilizes.
3. If the problem is resolved, continue the flight
4. If the problem continues, select a power setting where the propeller RPM fluctuations are minimum. Fly at an airspeed below 100 KIAS and land as soon as practical.

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| **15 - FLUCTUATIONS IN PROPELLER RPM** |