## SPEED LIMITATIONS

On the left side instrument panel, above on the left, it is placed the following placard reporting the speed limitations:

**Maximum L.G. op. speed**

**$V_{LO}$ / $V_{LE}$ = 122 KIAS**

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# SUPPLEMENT NO. G12 – SOUTH AFRICAN AFM

(SACAA APPROVED)

## Record of Revisions

| Rev | Revised page | Description of Revision | Tecnam Approval | | | EASA Approval Or Under DOA Privileges |
|---|---|---|---|---|---|---|
| | | | DO | OoA | HDO | |
| **0** | All | Editorial Change | A. Sabino | C. Caruso | M. Oliva | See Note (*) |
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Note (*): this Supplement has been originally issued on 2 May 2013, after EASA Third Country Validation process completion.

## LOEP

| Page | Revision | Page | Revision |
|---|---|---|---|
| **G11-1** | Rev 0 | **G11-5** | Rev 0 |
| **G11-2** | Rev 0 | **G11-6** | Rev 0 |
| **G11-3** | Rev 0 | **G11-7** | Rev 0 |
| **G11-4** | Rev 0 | **G11-8** | Rev 0 |

## TABLE OF CONTENTS

# INTRODUCTION

This Supplement applies for South African registered aircraft

It contains supplemental information to the basic information approved in EASA aircraft Flight Manual when the aircraft is registered in South Africa.

For Limitations, procedures, and performance information not contained in this supplement, refer to the basic Aircraft Flight Manual.

The information contained herein supplements or supersedes the basic Aircraft Flight Manual or the Supplement G1, as applicable.

## LIMITATIONS

### MAXIMUM OPERATING ALTITUDE

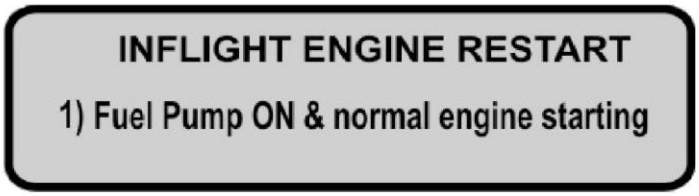
Maximum operating altitude is 14000 ft (4260 m) MSL.

**CAUTION**

*At altitudes between 10 000 feet (3048 m) and 12 000 feet (3658 m) for longer than 120 minutes intended flight time, or above 12 000 feet, the aircraft shall not be operated unless the aircrew is provided with the supplemental oxygen as prescribed in Document SA-CATS 91 and such oxygen may be used continuously whenever these circumstances prevail."*

### INFLIGHT ENGINE RESTART

The inflight engine restart procedure is reported on a placard (shown below) installed on the central console.



## GPS SYSTEMS

### GPS GNS 430 OR GNS 530 OPERATION (FOR AIRPLANES WITH AUTOPILOT INSTALLED)

- Use of GPS for precision approach navigation mode is not allowed.

- Use of GPS is prohibited as primary means for navigation. GPS is approved as supplemental means for navigation;

- Navigation using of the GPS system as the source of information is limited to IFR en route, terminal area and non-precision approach mode;

- During IFR in terminal area or non-precision approach using GPS, autopilot or flight director must be coupled to GPS.

- If RAIM function becomes unavailable in "en route" phase of flight, position must be verified every 15 minutes using other IFR approved navigation system;

- During IFR in terminal area or non-precision approach using GPS, in case RAIM function becomes unavailable, the GPS navigation must be discontinued;

- Before an IFR non-precision approach using GPS, the availability of the RAIM function must be checked to the time and place predicted (RAIM prediction). If predicted the unavailability of the RAIM function, navigation must be planned with others approved navigation systems;

- Before a non-precision approach using GPS, the database information must be compared with that in the approach chart, including transitions, position and altitude of waypoints;

- IFR non-precision approach using GPS must be based on the approved procedures of the equipment database. It cannot be done based on data manually included.

### GPS GNS 430 OR GNS 530 OPERATION (FOR AIRPLANES WITHOUT AUTOPILOT INSTALLED)

- Use of GPS for precision approach navigation mode is not allowed.

- Use of GPS is prohibited as primary means for navigation. GPS is approved as supplemental means for navigation;

- Use of GPS is prohibited for IFR in terminal area or in non-precision approach operations;

- If RAIM function becomes unavailable in en route phase of flight, position must be verified every 15 minutes using other IFR approved navigation system.

## WAAS AND SBAS FUNCTIONALITIES

The WAAS and SBAS functionalities are not available in South Africa and these functions are not tested or approved in South African air space.

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# SUPPLEMENT NO. G13 – ALTERNATORS WITH 70 A INSTALLATION

**Record of Revisions**

| Rev | Revised page | Description of Revision | Tecnam Approval | | | EASA Approval Or Under DOA Privileges |
|---|---|---|---|---|---|---|
| | | | DO | OoA | HDO | |
| 0 | all | Editorial change | A. Sabino | C. Caruso | M. Oliva | DOA Privileges. |
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## List of Effective Pages

| Page | Revision |
|---|---|
| **G13-1** | Rev 0 |
| **G13-2** | Rev 0 |
| **G13-3** | Rev 0 |
| **G13-4** | Rev 0 |
| **G13-5** | Rev 0 |
| **G13-6** | Rev 0 |

## INTRODUCTION

This section contains supplemental information to operate, in a safe and efficient manner, the aircraft when 70A alternators are installed replacing the standard, 40A ones (Design Change MOD 2006/202).

The information contained herein supplements or supersedes the basic Aircraft Flight Manual: detailed instructions are provided to allow the owner for replacing the AFM pages containing information amended as per the Design Change in subject.

**It is the owner's responsibility to replace the mentioned pages in the AFM in accordance with the instructions herein addressed section by section.**

## GENERAL

When 70A alternators are installed replacing the standard, 40A ones, the electrical system logic is not affected by any substantial change. Primary DC power is provided by two engine-driven alternators which, during normal operations, operate in parallel.

Each alternator is rated at 14,2-14,8 Vdc (through two external voltage regulators), 70 Amp and is provided with an automatic overvoltage device protecting the circuits and the electric components from an excessive voltage caused by alternator's failures.

The power rating of the each generator is such that if one generator fails the other one can still supply the airplane equipment to maintain flight safety.

# SECTION 3 - EMERGENCY PROCEDURES

This section report some procedures which replace the same procedure in the basic AFM.
The procedures affected from the replacement of existing 40A alternators with 70A are the following:

- **Single alternator failure/overvoltage**
- **Both alternators failure**
- **Both alternators overvoltage**

## SINGLE ALTERNATOR FAILURE / OVERVOLTAGE

| Annunciation window | Alert window |
|---|---|
| **L ALT FAIL** | Lh Alternator |

**OR**

| | |
|---|---|
| **R ALT FAIL** | Rh Alternator |

1. FIELD LH (or RH) *OFF*
2. FIELD LH (or RH) *ON*

**If the LH (or RH) ALT caution stays displayed**

***3.*** FIELD LH (or RH) *OFF*

**NOTE** *The battery and a single generator are able to supply the electrical power necessary for flight, but redundancy is lost.*

Equipment will be lost accordingly to the following table:

| LH Gen Bus | LH Avionic Bus | RH Avionic Bus | RH Gen Bus |
|---|---|---|---|
| Pitot Heat | DME | ADF | NAV Lights |
| Landing Light | Transponder | COM 2 | Rudder Trim |
| Taxi Light | A/P | NAV 2 | Stall Warning |
| | A/P Pitch Trim | MFD | |
| | | AHRS/ADC | |

***4. Land as soon as practicable***

## BOTH ALTERNATORS FAILURE

| Annunciation window | Alert window |
|---|---|
| L ALT FAIL | Lh Alternator |
| R ALT FAIL | Rh Alternator |

In event of both L and R ALT FAIL caution alerts displayed:

1. FIELD LH and RH — *BOTH OFF*
2. FIELD LH and RH — *BOTH ON (one at a time)*

**If the LH (or RH) ALT caution stays displayed**

1. Verify good ammeter indications on restored alternator
2. Refer to Single alternator failure / overvoltage drill (Para 2.1)

**If both LH and RH ALT cautions stay displayed**

3. FIELD LH and RH — *BOTH OFF*
4. CROSS BUS LH and RH — *BOTH OFF*

**If engine starting battery modification is applied**

5. EMERG BATT switch — ON
6. **Land as soon as possible.**

**If engine starting battery modification is not applied**

5. **Land as soon as possible.**

Equipment will be lost accordingly to the following table:

| LH Gen Bus | LH Avionic Bus | RH Avionic Bus | RH Gen Bus |
|---|---|---|---|
| Pitot Heat | DME | ADF | NAV Lights |
| Landing Light | Transponder | COM 2 | Rudder Trim |
| Taxi Light | A/P | NAV 2 | Stall Warning |
| | A/P Pitch Trim | MFD | |
| | | AHRS/ADC | |

**NOTE** *The battery will supply electrical power for at least 30 minutes.*

## BOTH ALTERNATORS OVERVOLTAGE

| Annunciation window | Alert window |
|---|---|
| L BUS VOLT HIGH | Lh overvoltage |
| R BUS VOLT HIGH | Rh overvoltage |

In event of both L and R BUS VOLT HIGH warning alerts displayed:

1. FIELD LH and RH — *BOTH OFF*
2. FIELD LH and RH — *BOTH ON (one at a time)*

**If the LH (or RH) BUS VOLT HIGH caution stays displayed**

3. Verify good ammeter indications on restored alternator
4. Refer to Single alternator failure / overvoltage drill (Para 2.1)

**If both LH and RH BUS VOLT HIGH warning stay displayed**

3. CROSS BUS LH and RH — *BOTH OFF*
4. FIELD LH and RH — *BOTH OFF*
5. FIELD LH and RH — *BOTH ON (one at a time)*

**If LH (or RH) BUS VOLT HIGH warning stays displayed**

6. Verify good ammeter indications on restored alternator
7. Switch CROSS BUS on the restored alternator side
8. Refer to Single alternator failure / overvoltage drill (Para 2.1)

**If both LH and RH BUS VOLT HIGH warning stay displayed**

7. FIELD LH and RH — *BOTH OFF*

**If engine starting battery modification is applied**

7. EMERG BATT switch — ON
8. **Land as soon as possible.**

**If engine starting battery modification is not applied**

8. **Land as soon as possible.**

Equipment will be lost accordingly to the following table:

| LH Gen Bus | LH Avionic Bus | RH Avionic Bus | RH Gen Bus |
|---|---|---|---|
| Pitot Heat | DME | ADF | NAV Lights |
| Landing Light | Transponder | COM 2 | Rudder Trim |
| Taxi Light | A/P | NAV 2 | Stall Warning |
| | A/P Pitch Trim | MFD | |
| | | AHRS/ADC | |

**NOTE** *The battery can supply electrical power for at least 30 minutes.*

# SUPPLEMENT NO. G14 - SMP FOR DIGITAL CONFIGURATION

## RECORD OF REVISIONS

| Rev | Revised page | Description of Revision | Tecnam Approval | | | EASA Approval Or Under DOA Privileges |
|---|---|---|---|---|---|---|
| | | | DO | OoA | HDO | |
| 0 | - | First issue | D. Ronca | C. Caruso | M. Oliva | DOA Approval |
| 1 | S4-26 | Integration of information formerly contained in Supplement G18 | A. Sabino | C. Caruso | M. Oliva | DOA Approval |
| | | | | | | |
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# LOEP

| | Pages | Revision |
|---|---|---|
| **Cover pages** | G14 – 3 thru 22 | *Rev. 0* |
| | G14 – 1, 2 | *Rev. 1* |
| **Section 2** | SMP2 – 3 | *Rev. 0* |
| **Section 3** | SSMP3 – 3 thru 5 | *Rev. 0* |
| | SSMP3 – 7 thru 9 | *Rev. 0* |
| | SSMP3 – 21 | *Rev. 0* |
| | SSMP3 – 29 | *Rev. 0* |
| | SSMP3 – 36 thru 40 | *Rev. 0* |
| | SSMP3 – 49 thru 53 | *Rev. 0* |
| **Section 4** | SSMP4 – 27 | *Rev. 0* |
| | SSMP4 – 26 | *Rev. 1* |
| **Section 7** | SSMP7 – 41 | *Rev. 0* |
| | SSMP7 – 44 thru 48 | *Rev. 0* |

## INTRODUCTION

This section contains supplemental information to operate, in a safe and efficient manner, the aircraft when equipped with Garmin G950 Integrated Flight Deck System (Design Change MOD 2006/002) and with Special Mission Platform. The Special Mission Platform refers to the following design changes:

- MOD2006/046 - Power supply from built-in generators
- MOD2006/202 - Replacement of existing 40A alternators with 70A
- MOD2006/204 - Installation of converter box

For the two first design changes the supplements (n° A15 and G13) are already approved by EASA and in this supplement we report the same information for reference.

The Rotax engine built-in generators, one for each engine, feed two bus bars made available for end user equipment, when the design change 2006/046 is installed.

When 70A alternators are installed replacing the standard, 40A ones, the electrical system logic is not affected by any substantial change. Primary DC power is provided by two engine-driven alternators which, during normal operations, operate in parallel.

Each alternator is rated at 14,2-14,8 Vdc (through two external, first fuselage frame installed voltage regulators), 70 Amp and is provided with an automatic overvoltage device protecting the circuits and the electric components from an excessive voltage caused by alternator's failures.

The power rating of the each generator is such that if one generator fails the other one can still supply the airplane equipment to maintain flight safety.

The information contained herein supplements or supersedes the basic Aircraft Flight Manual or the Supplement G1, as applicable: detailed instructions are provided to allow the owner for replacing the Basic AFM/Supplement G1 pages containing information amended as per the Design Changes in subject.

**NOTE**

*Usually, the Special Mission Platform P2006T is also equipped with holes in the cabin and/or tailcone, ready for third parties sensor's integration. While the Tecnam intent is to offer a platform ready for sensors' integration, it is end-user responsibility to receive the approval from authority for each equipment installation.*

**It is the owner's/operator's responsibility to replace the mentioned pages in the AFM in accordance with the instructions herein addressed section by section.**

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**Supplement G14: pages replacement instructions**

# SECTION 1 – GENERAL

Apply following instruction:

**See Basic AFM - Section 1**

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**Supplement G14: pages replacement instructions**

## SECTION 2 – LIMITATIONS

Apply following pages replacement procedure:

| Supplement G14 - LIMITATIONS page | | Basic AFM Section 2 page |
|---|---|---|
| SMP2 – 3 | **REPLACES** | Page 2 – 3 of Basic AFM, Section 2 |

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# 1. INTRODUCTION

Section 2 includes operating limitations, instrument markings and basic placards necessary for safe operation of ***P2006T*** aircraft, its engines and standard systems and equipment.

LH and RH AUX FIELDS, enabling the converter box operations for Special Mission purposes, should be kept OFF during take-off, climb, landing and any abnormal procedure that affects electrical generating system (including single engine operation):

**During Take-off, Climb, Landing and Single Engine Operations:**

| | |
|---|---|
| **LH and RH AUX FIELD switches** | ***BOTH OFF*** |

**NOTE** *This limitation only applies when both 70Amp alternators and converter box are installed.*

**NOTE** *Safety provisions, as following described, automatically disengage the LH and RH AUX FIELDS in case of one main field malfunction (i.e. for OEI). Also, if only one AUX FIELD switch is ON, the converter box is not powered.*

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**Supplement G14: pages replacement instructions**

## SECTION 3 – EMERGENCY PROCEDURES

Apply following pages replacement procedure:

| Supplement G14 - EMERGENCY PROCEDURES page | | Supplement G1 Section 3 page |
|---|---|---|
| SSMP3 – 3 thru 5 | **REPLACE** | Page S3 – 3 thru 5 of Supplement G1, Section 3 |
| SSMP3 – 7 thru 9 | **REPLACE** | Page S3 – 8 thru 11 of Supplement G1, Section 3 |
| SSMP3 – 21 | **REPLACES** | Page S3 – 21 of Supplement G1, Section 3 |
| SSMP3 – 29 | **REPLACES** | Page S3 – 29 of Supplement G1, Section 3 |
| SSMP3 – 36 thru 40 | **REPLACE** | Page S3 – 36 thru 40 of Supplement G1, Section 3 |
| SSMP3 – 49 thru 53 | **REPLACE** | Page S3 – 49 thru 53 of Supplement G1, Section 3 |

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# 1. INTRODUCTION

Section 3 includes checklists and detailed procedures for coping with various types of emergency conditions that could arise after a system failure.

The procedures affected from installation of the Special Mission Platform are the following:

- **Single alternator failure / overvoltage**
- **Both alternators failure**
- **Both alternators overvoltage**
- **Engine securing**
- **Total electrical failure**
- **Inflight engine restart**
- **Engine failure during takeoff run**
- **Engine failure during climb**
- **Engine failure in flight**
- **Engine fire on the ground**
- **Engine fire during takeoff run**
- **Engine fire in flight**
- **Electrical smoke in cabin on the ground**
- **Electrical smoke in cabin during flight**

The main difference regarding aircraft systems, compared with the basic AFM, is the presence of the Power supply from built-in generators, Alternators with 70A and Converter Box. The powering and disconnection of converter box is very simple and, in most of abnormal cases, is automatically managed by relays and safety provisions.
The converter box (following described in Section 7) is managed by the pilot only via two switches, located in the bottom LH side of pilot seat on a single panel provided by: two switches, two breakers and two indicating lamps.
Only when pilot selects BOTH switches ON (right and left AUX) and both alternators are operative the system allows a surplus of power generated by the engines and alternators to flow into 4x converters and, then, into mission equipment, when installed.
The health status of converters inside the box (located into the baggage compartment) is monitored by mission operator, via 4x failure indicating lamps. Following the key concepts when managing converter boxes:

1. Mission Power Switches: they enable the converter box ONLY when BOTH are set to ON;
2. Converter box power: enabled only if both LH and RH main alternators are generating power;
3. Converter box: automatically switches OFF in case LH or RH main alternators is faulty / not generating;
4. Converter box: automatically switches OFF in case LH or RH mission switch is set to OFF;

5. Failure lamp: when illuminated, indicates that the correspondent converter is not working properly and needs to be replaced if the maximum available power from converter box is needed. When all converters are working properly, the system is capable to output 40A@28V. If one converter fails, 12A@28V are lost. For this reason, the end-user mission can continue if the equipment demand is less than 25/28A. On the contrary, the converter needs to be replaced.

Before operating the aircraft, the pilot/operator should become thoroughly familiar with this manual and, in particular, with this Section. Further on a continued and appropriate training and self study should be done.

Two types of emergency procedures are hereby given.

a. "BOLD FACES" which must be known by heart by the pilot and executed, in the correct and complete sequence, immediately after the failure is detected and confirmed.

   These procedures characters are boxed and highlighted:

## 1.1 ENGINE FAILURE DURING TAKEOFF RUN

| **BEFORE ROTATION: ABORT TAKE OFF** | | |
|---|---|---|
| **1.** | **Throttle Lever** | ***BOTH IDLE*** |
| **2.** | **Rudder** | ***Keep heading control*** |
| **3.** | **- -** | |
| **4.** | **- -** | |

b. "other procedures" which should be well theoretically known and mastered, but that can be executed entering and following step by step the AFM current section appropriate checklist.

Additionally operating the aircraft, the pilot should become thoroughly familiar with the Garmin G950 Pilot's Guide for Tecnam P2006T (P/N 190-01146-XX) – last issue - and, in particular, with the present AFM Section.

**CAUTION**

*Garmin G950 Pilot's Guide for Tecnam P2006T (P/N 190-01146-XX) – last issue - must be carried onboard the airplane at all times.*

**WARNING**

*Garmin G950 has a very high degree of functional integrity. However, the pilot must recognize that providing monitoring and/or self-test capability for all conceivable system failures is not practical. Although unlikely, it may be possible for erroneous operation to occur without a fault indication shown by the G950. It is thus the responsibility of the pilot to detect such an occurrence by means of crosschecking with all redundant or correlated information available in the cockpit.*

***In any case, as a failure or abnormal behaviour is detected pilots should act as follows:***

*1. Keep self-control and maintain aircraft flight attitude and parameters*
*2. Analyse the situation identifying, if required, the area for a possible emergency landing*
*3. Apply the pertinent procedure*
*4. Inform the Air Traffic Control as applicable*

**NOTE**

*For the safe conduct of later flights, any anomaly and/or failure must be communicated to the National Authorities in charge, in order to put the aircraft in a fully operational and safe condition.*

**NOTE**

*In this Chapter, following definitions apply:*
***Land as soon as possible**: land without delay at the nearest suitable area at which a safe approach and landing is assured.*

***Land as soon as practical**: land at the nearest approved landing area where suitable repairs can be made.*

## 2.1. SINGLE ALTERNATOR FAILURE / OVERVOLTAGE

| Annunciation window | Alert window |
|---|---|
| **L ALT FAIL** | Lh Alternator |

**OR**

| | |
|---|---|
| **R ALT FAIL** | Rh Alternator |

1. FIELD LH (or RH) *OFF*
2. LH and RH AUX FIELD switch *BOTH OFF*
3. FIELD LH (or RH) *ON*

**If the LH (or RH) ALT caution stays displayed**

1. FIELD LH (or RH) *OFF*

**If the LH (or RH) GENERATOR caution persists displayed**

1. CROSS BUS LH (or RH) *OFF*
2. **Land as soon as practical.**

**NOTE** *The battery and a single generator are able to supply the electrical power necessary for the entire mission, but redundancy is lost.*

## 2.2 BOTH ALTERNATORS FAILURE

| Annunciation window | Alert window |
|---|---|
| L ALT FAIL | Lh Alternator |
| R ALT FAIL | Rh Alternator |

In event of both L and R ALT FAIL caution alerts displayed:

1. FIELD LH and RH — *BOTH OFF*
2. LH and RH AUX FIELD switch — *BOTH OFF*
3. FIELD LH and RH — *BOTH ON*

**If both LH and RH ALT cautions stay displayed**

1. FIELD LH and RH — *BOTH OFF*
2. CROSS BUS LH and RH — *BOTH OFF*

**If engine starting battery modification is applied**

1. EMERG BATT switch — ON
2. **Land as soon as possible.**

**If engine starting battery modification is not applied**

1. **Land as soon as possible.**

**NOTE** *The battery can supply electrical power for at least 30 minutes.*

## 2.3 BOTH ALTERNATORS OVERVOLTAGE

| Annunciation window | Alert window |
|---|---|
| L BUS VOLT HIGH | Lh overvoltage |
| R BUS VOLT HIGH | Rh overvoltage |

In event of both L and R BUS VOLT HIGH warning alerts displayed:

1. FIELD LH and RH *BOTH OFF*
2. LH and RH AUX FIELD switch *BOTH OFF*
3. FIELD LH and RH *BOTH ON (one at a time)*

**if LH (or RH) OVERVOLT warning stays displayed**

1. FIELD LH (or RH) *OFF*

**if both LH and RH OVERVOLT warning stay displayed**

1. CROSS BUS LH and RH *BOTH OFF*
2. FIELD LH and RH *BOTH OFF*
3. FIELD LH and RH *BOTH ON (one at a time)*

***If LH (or RH) OVERVOLT warningt stays displayed***

1. FIELD LH (or RH) *OFF*
2. CROSS BUS LH (or RH) *ON*

***If both LH and RH OVERVOLT warning stay displayed***

1. FIELD LH and RH *BOTH OFF*
2. CROSS BUS LH and RH *BOTH OFF*

**If engine starting battery modification is applied**

1. EMERG BATT switch ON
2. **Land as soon as possible.**

**If engine starting battery modification is not applied**

1. **Land as soon as possible.**

**NOTE** *The battery can supply electrical power for at least 30 minutes.*

## 3. ENGINE SECURING

Following procedure is applicable to shut-down one engine in flight:

| | |
|---|---|
| **1. Throttle Lever** | ***IDLE*** |
| **2. Ignition** | ***BOTH OFF*** |
| **3. Propeller Lever** | ***FEATHER*** |
| **4. Fuel Selector** | ***OFF*** |
| **5. Electrical fuel pump** | ***OFF*** |
| **6. LH and RH AUX FIELD switch** | ***BOTH OFF*** |

**NOTE**

*If necessary, this procedure is applicable to both engines. When both engines are secured, both CROSS BUS switches must be set to OFF.*

After securing engine(s), after analysing situation, refer immediately to following procedures:

| | |
|---|---|
| ENGINE FAILURE IN FLIGHT: | see Para. 6.5 |
| SINGLE GENERATOR FAILURE: | see Para. 2.1 |
| or BOTH GENERATOR FAILURE: | see Para. 2.2 |
| INFLIGHT ENGINE RESTART: | see Para. 6.2 |
| ONE ENGINE INOPERATIVE LANDING: | see Para. 6.6 |
| or LANDING WITHOUT ENGINE POWER: | see Para. 10.1 |

# 5. OTHER EMERGENCIES

## 5.1 EMERGENCY DESCENT

CAUTION

*Descent with airspeed at VLE, idle power and gear down will provide high descent rates and pitch attitudes up to -15°.*

*Anticipate altitude capture and return to level flight during emergency descent in order to assure a safe and smooth recovery from maneuver.*

| | | |
|---|---|---|
| 1. | Power levers | *IDLE* |
| 2. | Flaps | *UP* |
| 3. | IAS | *below VLO/VLE* |
| 4. | Landing gear | *DOWN* |
| 5. | Airspeed | *Up to VLE* |

## 5.2 TOTAL ELECTRICAL FAILURE

In case of electrical system overall failure, apply following procedure:

| | | |
|---|---|---|
| 1. | Emergency light | *ON* |
| 2. | Standby attitude indicator switch | *ON* |
| 3. | MASTER SWITCH | *OFF* |
| 4. | FIELD LH and RH | *BOTH OFF* |
| 5. | LH and RH AUX FIELD switch | *BOTH OFF* |
| 6. | MASTER SWITCH | *ON* |
| 7. | FIELD LH and RH | *BOTH ON* |

**If failure persists**

| | | |
|---|---|---|
| 9. | EMERG BATT switch | ON (if engine starting battery installed) |

10. **Land as soon as possible** applying *emergency landing gear extension* procedure (see Para. 7.1)

WARNING

*An electrical system overall failure prevents flaps operation: landing distance without flaps increases of about 25%.*

CAUTION

*A fully charged battery can supply electrical power for at least 30 minutes.*

## 6.2 INFLIGHT ENGINE RESTART

WARNING

*After:*

- *mechanical engine seizure;*
- *fire;*
- *major propeller damage*

*engine restart is not recommended.*

| | | |
|---|---|---|
| 1. | Carburettor heat | *ON if required* |
| 2. | Electrical fuel pump | *ON* |
| 3. | Fuel quantity indicator | *CHECK* |
| 4. | Fuel Selector | *CHECK (Crossfeed if required)* |
| 5. | FIELD | *OFF* |
| 6. | LH and RH AUX FIELD switch | *BOTH OFF* |
| 7. | Ignition | *BOTH ON* |
| 8. | Operating engine Throttle Lever | *SET as practical* |
| 9. | Stopped engine Throttle Lever | *IDLE* |
| 10. | Stopped engine Propeller Lever | *FULL FORWARD* |
| 11. | Start push-button | *PUSH* |
| 12. | Propeller Lever | *SET at desired rpm* |
| 13. | FIELD | *ON (check for positive ammeter)* |
| 14. | Engine throttle levers | *SET as required* |

**If engine restart is unsuccessful**

| | | |
|---|---|---|
| 15. | EMERG BATT switch | ON (if starting battery installed) |

16. Repeat engine restart procedure

CAUTION

*After engine restart, if practical, moderate propeller rpm and throttle increase to allow OIL and CHT/CT temperatures for stabilizing in the green arcs.*

NOTE

*If the fuel quantity in the tank which feeds the stopped engine is low, select the opposite side fuel tank by means of the fuel selector.*

**If engine restart is still unsuccessful:**

17. Affected engine — *SECURE (see engine securing procedure Para. 3)*
18. **Land as soon as possible** applying *one engine inoperative landing* procedure. See Para. 6.6

## 6.3 ENGINE FAILURE DURING TAKEOFF RUN

**BEFORE ROTATION: ABORT TAKE OFF**

| | | |
|---|---|---|
| 1. | **Throttle Lever** | ***BOTH IDLE*** |
| 2. | **Rudder** | ***Keep heading control*** |
| 3. | **Brakes** | ***As required*** |

**When safely stopped:**

| | | |
|---|---|---|
| 4. | Failed Engine Ignition | BOTH OFF |
| 5. | Failed Engine Field | *OFF* |
| 6. | LH and RH AUX FIELD switch | *BOTH OFF* |
| 7. | Failed Engine Electrical fuel pump | *OFF* |

**IF THE DECISION IS TAKEN TO CONTINUE THE TAKEOFF:**

**WARNING**

*A take-off abort should always be preferred if a safe stop can be performed on ground.*

*A suggested "GO-NO-GO" criteria is: abort take-off until LG is still down and locked.*

*Once airborne accelerate to Blue Line Speed ($V_{YSE}$) before commanding LG retraction.*

*Take-off planning should take into account that high density altitude and aircraft mass may result in OEI negative climb rate.*

*$V_{YSE}$ with flap up shall be flown in order to achieve best possible rate of climb after landing gear retraction and engine feathering.*

| | | |
|---|---|---|
| **1.** | **Operating engine Throttle Lever** | ***FULL POWER*** |
| **2.** | **Operating engine Propeller Lever** | ***FULL FORWARD*** |
| **3.** | **Heading** | ***Keep control using rudder and ailerons*** |
| **4.** | **Attitude** | ***Reduce as appropriate to keep airspeed over 62 KIAS*** |
| **5.** | **Inoperative engine Propeller Lever** | ***FEATHER*** |
| **6.** | **Landing gear control lever** | ***UP*** |
| **7.** | **Airspeed** | ***$V_{XSE}$/$V_{YSE}$ as required*** |
| **8.** | **Flaps** | ***0°*** |
| **9.** | **LH and RH AUX FIELD switch** | ***BOTH OFF*** |

## 6.4 ENGINE FAILURE DURING CLIMB

| | | |
|---|---|---|
| 1. | **Autopilot** | **OFF** |
| 2. | **Heading** | ***Keep control using rudder and ailerons*** |
| 3. | **Attitude** | ***Reduce as appropriate to keep airspeed over 62 KIAS*** |

| | | |
|---|---|---|
| 4. | Operating engine Throttle Lever | *FULL THROTTLE* |
| 5. | Operating engine Propeller Lever | *FULL FORWARD* |
| 6. | Operative engine Electrical fuel pump | *Check ON* |
| 7. | LH and RH AUX FIELD switch | *BOTH OFF* |
| 8. | Inoperative engine Propeller Lever | *FEATHER* |
| 9. | Inoperative engine | Confirm and *SECURE* |

**If engine restart is possible:**

10. Apply INFLIGHT ENGINE RESTART procedure *see Para 6.2*

**If engine restart is unsuccessful or it is not recommended:**

11. **Land as soon as possible**
12. One engine inoperative landing procedure. *see Para. 6.6*

WARNING

*Following a mechanical engine seizure, fire or a major propeller damage engine restart is not recommended.*

WARNING

*Continuation of flight to a safe landing runway must be planned taking into account maximum operating ceiling in OEI condition. Refer to Section 5 Para 1, "One-engine rate of climb".*

## 6.5 ENGINE FAILURE IN FLIGHT

| | | |
|---|---|---|
| **1.** | **Autopilot** | ***OFF*** |
| **2.** | **Heading** | ***Keep control using rudder and ailerons*** |
| **3.** | **Attitude** | ***Adjust as appropriate to keep airspeed over 62 KIAS*** |

| | | |
|---|---|---|
| **4.** | LH and RH AUX FIELD switch | *BOTH OFF* |
| **5.** | Operating engine | *Monitor engine instruments* |
| **6.** | Operative engine Electrical fuel pump | *Check ON* |
| **7.** | Operating engine Fuel Selector | *Check correct feeding (crossfeed if needed)* |

**If engine restart is possible:**

**8.** Apply INFLIGHT ENGINE RESTART procedure *see Para 6.2*

**If engine restart is unsuccessful or it is not recommended:**

**9.** Land as soon as possible

**10.** One engine inoperative landing procedure. *see Para. 6.6*

**WARNING**

*Following a mechanical engine seizure, fire or a major propeller damage engine restart is not recommended.*

**WARNING**

*Continuation of flight to a safe landing runway must be planned taking into account maximum operating ceiling in OEI condition. Refer to Section 5 Para 12. Rate of climb with One Engine Inoperative.*

# 8 SMOKE AND FIRE OCCURRENCE

## 8.1 ENGINE FIRE ON THE GROUND

| | | |
|---|---|---|
| 1. | **Fuel Selectors** | ***BOTH OFF*** |
| 2. | **Ignitions** | ***ALL OFF*** |
| 3. | **LH and RH AUX FIELD switch** | ***BOTH OFF*** |
| 4. | **Electrical fuel pumps** | ***BOTH OFF*** |
| 5. | **Cabin heat and defrost** | ***OFF*** |
| 6. | **MASTER SWITCH** | ***OFF*** |
| 7. | **Parking Brake** | ***ENGAGED*** |
| 8. | **Aircraft Evacuation** | **carry out immediately** |

**WARNING**

*Consider use of ditching emergency exit to escape in case pilot or passenger doors are blocked, watch for engine hot parts, fuel, hydraulic fluid or oil spills. Leave aircraft in upwind direction.*

## 8.2 ENGINE FIRE DURING TAKEOFF RUN

**BEFORE ROTATION: ABORT TAKE OFF**

| | | |
|---|---|---|
| 1. | **Throttle Lever** | **BOTH IDLE** |
| 2. | **Rudder** | ***Keep heading control*** |
| 3. | **Brakes** | ***As required*** |

**With aircraft under control**

| | | |
|---|---|---|
| 4. | **Fuel Selector** | ***BOTH OFF*** |
| 5. | **Ignitions** | ***ALL OFF*** |
| 6. | **LH and RH AUX FIELD switch** | ***BOTH OFF*** |
| 7. | **Electrical fuel pump** | ***BOTH OFF*** |
| 8. | **Cabin heat and defrost** | ***OFF*** |
| 9. | **MASTER SWITCH** | ***OFF*** |
| 10. | **Parking Brake** | ***ENGAGED*** |
| 11. | **Aircraft Evacuation** | ***carry out immediately*** |

WARNING

*Consider use of ditching emergency exit to escape in case pilot or passenger doors are blocked, watch for engine hot parts, fuel, hydraulic fluid or oil spills. Leave aircraft in upwind direction.*

**IF THE DECISION IS TAKEN TO CONTINUE THE TAKEOFF:**

WARNING

*A take-off abort should always be preferred if a safe stop can be performed on ground.*

*A suggested "GO-NO-GO" criteria is: abort take-off until LG is still down and locked.*

*Once airborne accelerate to Blue Line Speed ($V_{YSE}$) before commanding LG retraction.*

*Take-off planning should take into account that high density altitude and aircraft mass may result in OEI negative climb rate.*

*$V_{YSE}$ with flap up shall be flown in order to achieve best possible rate of climb after landing gear retraction and engine feathering.*

| | | |
|---|---|---|
| 1. | **Operating engine Throttle Lever** | ***FULL POWER*** |
| 2. | **Operating engine Propeller Lever** | ***FULL FORWARD*** |
| 3. | **Heading** | ***Keep control using rudder and ailerons*** |
| 4. | **Attitude** | ***Reduce as appropriate to keep airspeed over 62 KIAS*** |
| 5. | **Fire affected engine Propeller Lever** | ***FEATHER*** |
| 6. | **Landing gear control lever** | ***UP*** |
| 7. | **Airspeed** | ***$V_{XSE}/V_{YSE}$ as required*** |
| 8. | **Flaps** | ***0°*** |

**At safe altitude**

| | | |
|---|---|---|
| **9.** | LH and RH AUX FIELD switch | *BOTH OFF* |
| **10.** | Cabin heat and defrost | *BOTH OFF* |
| **11.** | Fire affected engine Fuel Selector | *Confirm and OFF* |
| **12.** | Fire affected engine Ignitions | *Confirm and BOTH OFF* |
| **13.** | Fire affected engine Electrical fuel pump | *Confirm and OFF* |
| **14.** | Fire affected engine FIELD | *OFF* |

**15.** **Land as soon as possible** applying *one engine inoperative landing* procedure. See Para. 6.6

## 8.3 ENGINE FIRE IN FLIGHT

| | | |
|---|---|---|
| **1.** | **Cabin heat and defrost** | ***BOTH OFF*** |
| **2.** | **LH and RH AUX FIELD switch** | ***BOTH OFF*** |
| **3.** | **Autopilot** | ***OFF*** |
| **4.** | **Fire affected engine Fuel Selector** | ***Confirm and OFF*** |
| **5.** | **Fire affected engine Ignition** | ***Confirm and BOTH OFF*** |
| **6.** | **Fire affected engine Throttle Lever** | ***Confirm and FULL FORWARD*** |
| **7.** | **Fire affected engine Propeller Lever** | ***Confirm and FEATHER*** |
| **8.** | **Fire affected engine Electrical fuel pump** | ***OFF*** |
| **9.** | **Heading** | ***Keep control using rudder and ailerons*** |
| **10.** | **Attitude** | ***Adjust as appropriate to keep airspeed over 62 KIAS*** |
| **11.** | **Fire affected engine Field** | ***OFF*** |
| **12.** | **Cabin ventilation** | ***OPEN*** |

**13. Land as soon as possible** applying *one engine inoperative landing* procedure. See Para. 6.6

## 8.4 ELECTRICAL SMOKE IN CABIN ON THE GROUND

| | | |
|---|---|---|
| **1.** | **MASTER SWITCH** | ***OFF*** |
| **2.** | **Cabin heat and defrost** | ***OFF*** |
| **3.** | **LH and RH AUX FIELD switch** | ***BOTH OFF*** |
| **4.** | **Throttle Lever** | ***BOTH IDLE*** |
| **5.** | **Ignitions** | ***ALL OFF*** |
| **6.** | **Fuel Selector** | ***BOTH OFF*** |
| **7.** | **Parking Brake** | ***ENGAGED*** |
| **8.** | **Aircraft Evacuation** | **carry out immediately** |

**WARNING**

*Consider use of ditching emergency exit to escape in case pilot or passenger doors are blocked, watch for engine hot parts, fuel, hydraulic fluid or oil spills. Leave aircraft in upwind direction.*

## 8.5 ELECTRICAL SMOKE IN CABIN DURING FLIGHT

| | | |
|---|---|---|
| **1.** | **Cabin ventilation** | ***OPEN*** |
| **2.** | **Emergency light** | ***ON*** |
| **3.** | **Standby attitude indicator switch** | ***ON*** |
| **4.** | **Gain VMC conditions as soon as possible** | |

**In case of cockpit fire:**

| | | |
|---|---|---|
| **5.** | **Fire extinguisher** | ***use toward base of flames*** |

**CAUTION**

*A tripped circuit breaker should not be reset.*

**If smoke persists, shed electrical supply in order to isolate faulty source by:**

| | | |
|---|---|---|
| 6. | FIELD LH and RH | *OFF* |
| 7. | LH and RH AUX FIELD switch | *BOTH OFF* |
| 8. | AVIONICS LH and RH | *OFF* |
| 9. | CROSS BUS LH and RH | *BOTH OFF* |

**CAUTION**

*A fully charged battery can supply electrical power for at least 30 minutes.*

**If faulty source is found:**

10. It may be possible to restore non faulty power sources (one at a time)

**If smoke persists:**

**WARNING**

*Before total electrical system shutdown consider gaining VMC condition, at night set personal emergency light on.*

*Only emergency light and emergency ADI will be electrically powered.*

*All radio COM and NAV, Landing Gear lever (normal mode) and indication lights, electrical trims and flaps will be unserviceable.*

11. MASTER SWITCH *OFF*

12. **Land as soon as possible**

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**Supplement G14: pages replacement instructions**

## SECTION 4 – NORMAL PROCEDURES

Apply following pages replacement procedure:

| Supplement G14 - NORMAL PROCEDURES page | | Supplement S1 Section 4 page |
|---|---|---|
| SSMP4 – 26 thru 27 | **REPLACE** | Page S4 – 26 thru 27 of Supplement G1, Section 4 |

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## 3.10 CRUISE

**1** LH and RH Propeller Lever *SET to 1900-2250 RPM*

**CAUTION** *Throttles MAP decrease should be made before propeller speed reduction below 2200 RPM, as, contrariwise, Propeller Lever increase RPM should be set before engine Throttle Levers are advanced.*

**2** Engine parameters check (LH and RH)

- Oil temperature: *90° - 110 ° C*
  *(or 50° - 130° C, if MOD2006/002 is applied)*
- CHT / CT: *50° - 135° / 50° - 120 °C*
- Oil pressure: *2 - 5 bar.*
- Fuel pressure: *2.2 – 5.8 psi*
  **2.2 – 7.26 psi (0.15 – 0.50 bar)*

**applicable for fuel pump part no.893110 and no.893114*

**3** Carburettor heat as needed *(see also instructions addressed on Section 3*

**WARNING** *Deselect and do not use Auto Pilot if possible icing condition area is inadvertently entered.*

**4** Fuel balance and crossfeed *check as necessary*

**NOTE** *To evaporate possibly accumulated condensation water, once per flight day (for approximately 5 minutes) 100° C (212° F) oil temperature must be reached.*

### 3.10.1 CONVERTER BOX TURN ON

| | | |
|---|---|---|
| 1 | LH and RH AUX FIELD | *ON* |
| 2 | Converter Box | *Check enabled (no fail lamps)* |
| 3 | Mission systems | *Use as required* |

### 3.10.2 CONVERTER BOX TURN OFF

| | | |
|---|---|---|
| 1 | Mission systems | *Shut down as necessary* |
| 2 | LH and RH AUX FIELD | *OFF* |
| 3 | Green lamps on switch panel | *Check OFF* |

## 3.11 TURBULENT AIR OPERATION

In keeping with good operating practice used in all aircraft, it is recommended that when turbulent air is encountered or expected, the airspeed be reduced to maneuvering speed to reduce the structural loads caused by gusts and to allow for inadvertent speed build-ups, which may occur as a result of the turbulence or of distractions caused by the conditions.

## 3.12 DESCENT AND APPROACH

| | | |
|---|---|---|
| **1** | Propellers | *Set to Max Continuous 2250 RPM* |
| **2** | Carburettors heat | *As required* |
| **3** | Altimeter setting | *QNH set and crosscheck* |

## 3.13 BEFORE LANDING

| | | |
|---|---|---|
| **1** | Rear passengers seats | *Seats set at full aft and lower position* |
| **2** | LH and RH Electrical Fuel pump | *BOTH ON* |
| **3** | On downwind leg: | |

| MTOW 1180kg | MTOW 1230 kg |
|---|---|
| $V_{FE}$= 119KIAS | $V_{FE}$=122KIAS |

*Flaps T/O*

| | | |
|---|---|---|
| **4** | Speed below applicable VLO/VLE | *Landing gear control knob - DOWN – Check green lights ON* |
| **5** | Carburettors heat | *CHECK OFF* |
| **6** | LH and RH Propeller Lever | *FULL FORWARD* |
| **7** | On final leg: speed below 93 KIAS | *Flaps FULL* |
| **8** | Final Approach Speed | |

| MTOW 1180kg | MTOW 1230 kg |
|---|---|
| $V_{APP}$= 70KIAS | $V_{APP}$=71KIAS |

| | | |
|---|---|---|
| **9** | Landing and taxi light | *ON* |
| **10** | Touchdown speed | *65 KIAS* |

**Supplement G14: pages replacement instructions**

## SECTION 5 – PERFORMANCE

Apply following instruction:

**See Basic AFM - Section 5**

**NOTE**

*Usually, the Special Mission Platform P2006T is also equipped with holes in the cabin and/or tailcone, ready for third parties sensor's integration. While the Tecnam intent is to offer a platform ready for sensors' integration, it is end-user responsibility to receive the approval from authority for each equipment installation, including the supplement of Section 5, should the equipment affect it (i.e. protruding cameras).*

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**Supplement G14: pages replacement instructions**

## SECTION 6 – WEIGHT AND BALANCE

Apply following instruction:

**See Basic AFM - Section 6**

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**Supplement G14: pages replacement instructions**

## SECTION 7 – AIRFRAME AND SYSTEMS DESCRIPTION

Apply following pages replacement procedure:

| Supplement G14 - AIRFRAME AND SYSTEMS DESCRIPTION page | | Supplement S1 Section 7 page |
|---|---|---|
| SSMP7 – 41 | **REPLACES** | Page S7 – 41 of Supplement G1, Section 7 |
| SSMP7 – 44 thru 48 | **REPLACE** | Page S7 – 44 thru 46 of Supplement G1, Section 7 |

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# 18. ELECTRICAL SYSTEMS

Primary DC power is provided by two engine-driven alternators which, during normal operations, operate in parallel.

Each alternator is rated at 14,2-14,8 VDC, 70 Amp, and it is fitted with an external voltage regulator, which acts to maintain a constant output voltage, and with an automatic overvoltage device protecting the circuits and the electric components from an excessive voltage caused by alternator failures.

The power rating of the each alternator is such that if one alternator fails the other one can still supply the airplane equipment to maintain flight safety.

Secondary DC power is provided by a battery (lead type - Gill Teledyne G35, 12 V, 23-Ah in 1h run time) and an external DC power source can be connected to the aircraft DC distribution system.

On the instruments panel, right side, it is installed a voltmeter/ammeter. The ammeter section can indicate the current supplied by either left or right alternator switching a dedicated selector.

There are five different busses (make reference to Figure 11):

- Battery bus
- LH Alternator bus
- RH Alternator bus
- LH Avionic bus
- RH Avionic bus

The distribution system operates as a single bus with power being supplied by the battery and both alternator but it is possible to separate the left busses from the right busses when required by means of the Cross Bus switches.

All electrical loads are divided among the five busses on the basis of their importance and required power: equipment with duplicate functions are connected to separate busses.

The Battery bus, which supplies the most important loads, is energized from three sources: the battery and both alternator. This allows the bus for remaining active also in case of two independent faults in the supply paths.

The second ones allow, through a relay, for cutting off the power supply to the pertinent avionic bus.

When both generators are correctly operating and all above mentioned switches are in ON position, all the busses are connected to the generators.

The ignition switches, two for each engine and grouped on the over head panel, are instead independent from the airplane electrical system (generation and distribution); they only control and open the engine electrical circuit.

**WARNING**

*If ignition switches are turned ON, a propeller movement can cause the engine starting with consequent hazard for people nearby.*

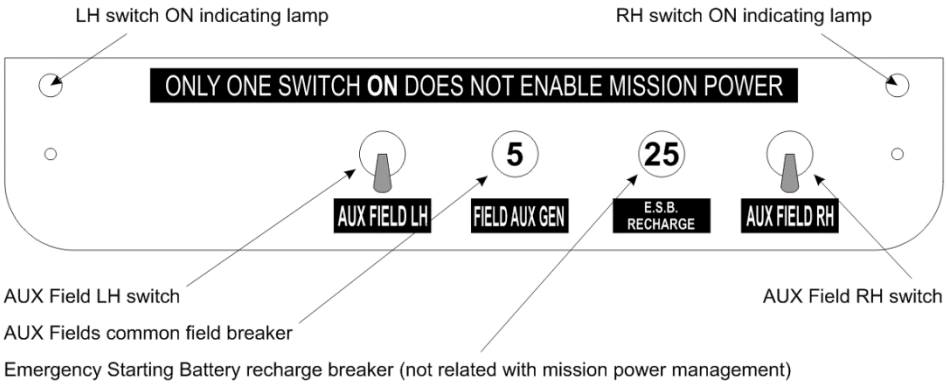
## 18.1 MISSION POWER CONTROL

When the airplane embodies the design change "Power supply from built-in generators", the Rotax engine built-in generators are enabled in order to supply power to two available bus bars.

Each built-in generator is activated by means of a switch (LH and RH AUX FIELD) located on the LH breakers rack where are located also the breakers related to the auxiliary power generation system.

The light (switch built-in light) indicates that the electrical power is being generated.

The below figure presents the control panel for the built-in generators which in turn activate the converter box:




**Switches panels**

Next paragraph describes the converter and connector box installed in the P2006T baggage compartment floor. This box allows the operator to have a source of 28Volt/40Amp electrical power for different mission equipment.

### 18.1.1 CONVERTER BOX

The following points illustrate how the converter box works:

1. A closed, light alloy made box incorporates 4x converters Ameri-King AK-550-12, each one capable of 12Amp/28VDC output using a 14VDC input;
2. Each converter is fed by one different power generation:
   - 20Amp coming directly from the LH aux generator bus;
   - 20Amp coming directly from the RH aux generator bus;
   - 30Amp coming from the LH external alternator bus;
   - 30Amp coming from the RH external alternator bus;
3. Each converter is protected with circuit breakers on the INPUT and OUTPUT sides;
4. The 30Amp current coming from the LH and RH external alternators is the amount of power surplus available due to the 2006/202 design change;
5. The same switches shown in the MOD2006/046 and reported in the figure above enable the relays that feed the converters;
6. Four relays enable the external power to feed also the converter box for ground test purposes, when external socket is connected;
7. A connector box allows the end user to have a maximum current of 40Amp at 28VDC available (1120W).

**NOTE**

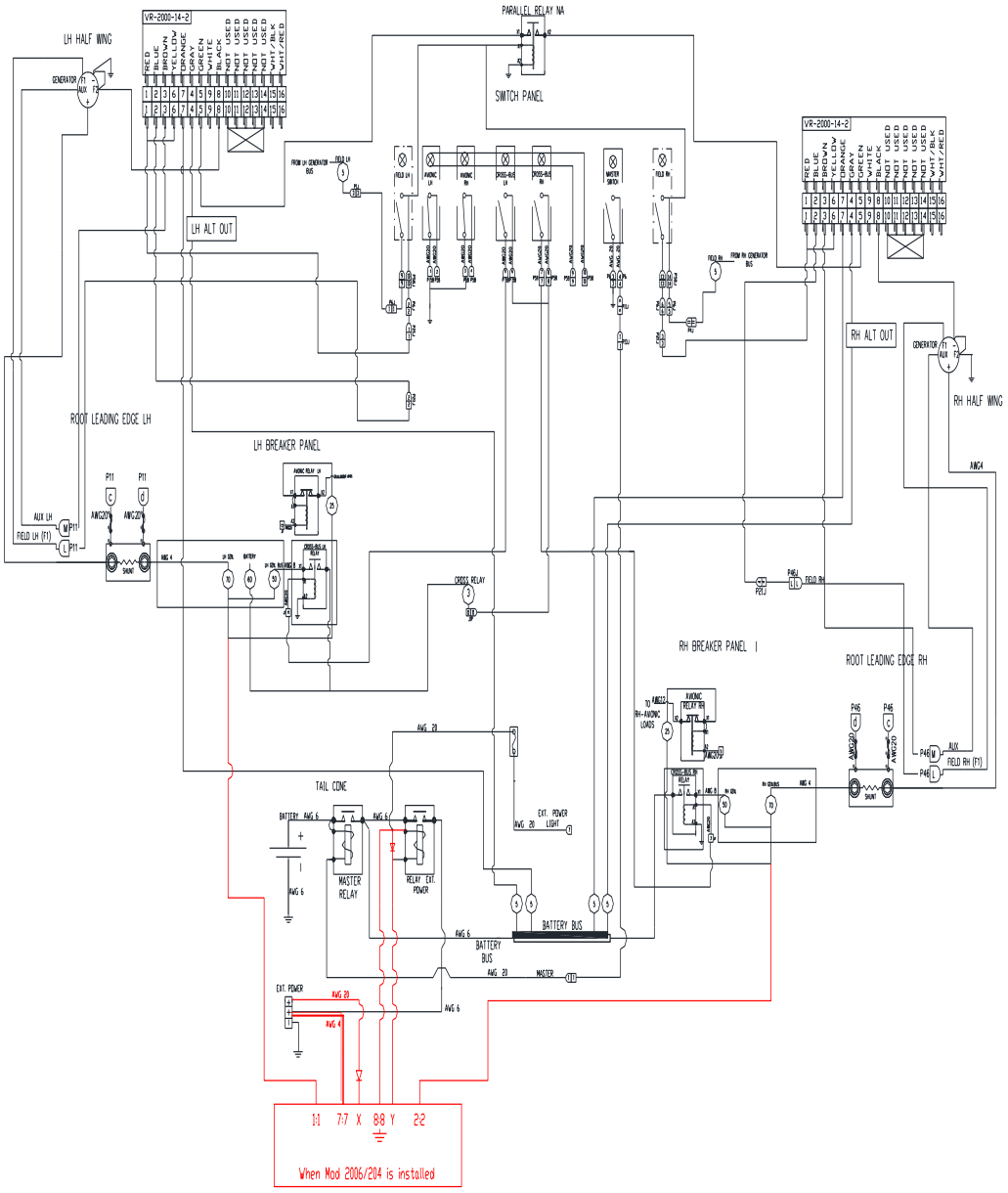
*When using the ground power unit to test on-ground the mission equipment, remember that:*

- *14VDC GPU only can be used, as done on standard P2006T.*
- *the minimum GPU capacity to properly feed mission equipment should be at least 150Amp @14VDC*
- *The FIELD AUX switches needs to be "ON" to test converter box connected equipment, "OFF" to test the aircraft avionics*

**NOTE**

*When connecting mission equipment to the system please note tha the amount of current provided depends on engine rpm setting. The maximum electrical power is available from 1.900rpm on.*

In the following figures the new Electrical system schematic is reported.




**Electrical system schematic (Page 1)**

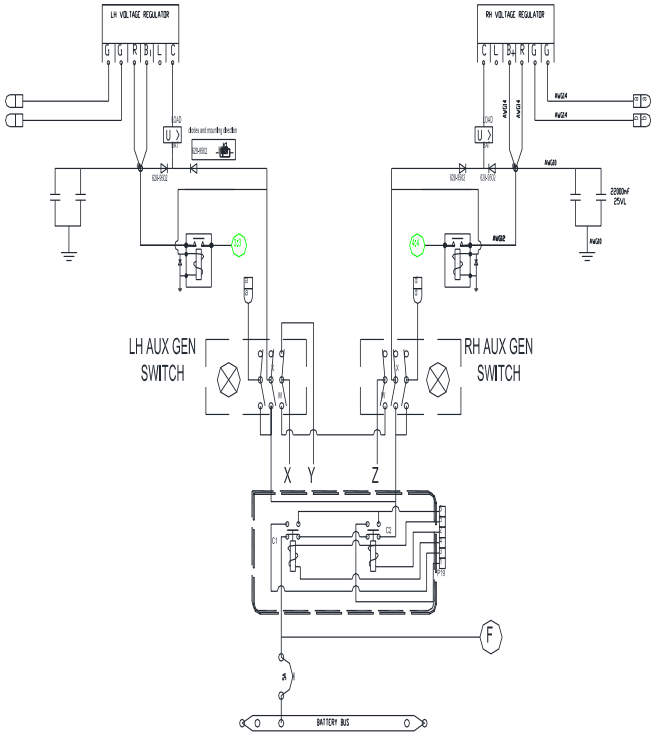
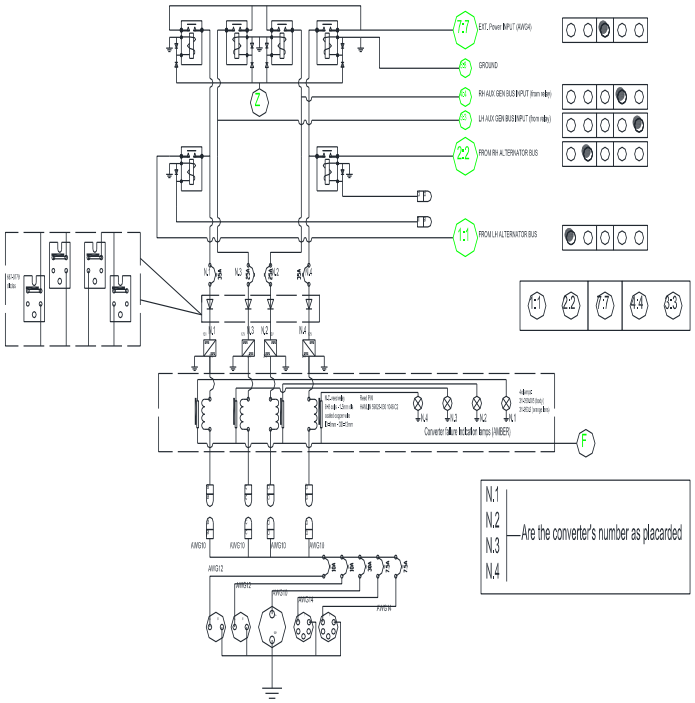



**Figure 25 – Electrical system schematic (Page 2)**




**Electrical system schematic (Page 3)**

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**Supplement G14: pages replacement instructions**

## SECTION 8 – GROUND HANDLING & SERVICE

Apply following instruction:

**See Basic AFM - Section 8**

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# SUPPLEMENT NO. G15
# JAPANESE AFMS

## Record of Revisions

| Rev | Revised page | Description of Revision | Tecnam Approval | | | EASA Approval Or Under DOA Privileges |
|---|---|---|---|---|---|---|
| | | | DO | OoA | HDO | |
| **0** | -- | First issue | D. Ronca | C. Caruso | M. Oliva | See Note (*) |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Note (*): this Supplement has been originally issued after EASA Third Country Validation process.

## LOEP

| Page | Revision | Page | Revision |
|---|---|---|---|
| **G15-1** | Rev 0 | | |
| **G15-2** | Rev 0 | | |
| **G15-3** | Rev 0 | | |
| **G15-4** | Rev 0 | | |
| **G15-5** | Rev 0 | | |
| **G15-6** | Rev 0 | | |
| **G15-7** | Rev 0 | | |
| **G15-8** | Rev 0 | | |

# TABLE OF CONTENTS

## INTRODUCTION

This Supplement applies for Japanese registered aircraft.

It contains supplemental information to the basic information approved in EASA aircraft Flight Manual when the aircraft is registered in Japan.

This supplement is applicable to both P2006T digital and analogue configuration.

For Limitations, procedures, and performance information not contained in this supplement, refer to the basic Aircraft Flight Manual.

## LIMITATION

### 1. Approved Fuel

- MOGAS compliant with PRC National Standard GB17930-2006 - Octane Rating (RON) 97
- MOGAS ASTM D4814
- MOGAS EN 228 Super/Super plus (min. RON 95)
- AVGAS 100 LL (ASTM D910)

NOTE: For additional information, refer to Rotax Service Instruction No. 912-016, latest issue.

**CAUTION**

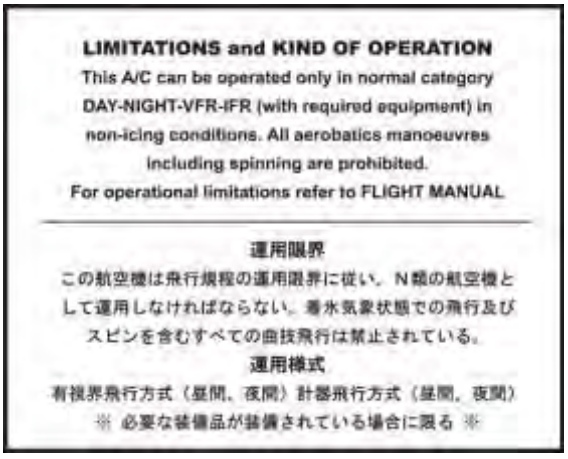
Prolonged use of Aviation Fuel Avgas 100LL results in greater wear of valve seats and greater combustion deposits inside cylinders due to higher lead content. It is therefore suggested to avoid using this type of fuel unless strictly necessary. Make reference to Rotax Maintenance Manual who provides dedicated checks due to the prolonged use of Avgas.

## 2. Japanese Placards

Hereinafter the placards, related to the operating limitations and installed on P2006T, are reported.

### 2.1. Operating Limitations

On the instrument panel, it is placed the following placard reminding the observance of aircraft operating limitations; make reference to Para. 22 for the list of equipment required on board to allow flight operations in VFR Day, VFR Night, IFR Day and IFR Night conditions.




### 2.2. Rear Seats

During Taxi, Take OFF, Landing (including Emergency Landing), both rear seats must be kept in the lowest and full aft position.

The following placard is located aside both rear seats.

## 2.3. Other Placards

| Description | Placard (English and Japanese) | Place |
|---|---|---|
| Smoking ban. | NO SMOKING \| 禁煙 | Instruments panel, right side |
| Ditching emergency exit: opening instructions |  | Ditching emergency exit handle: internal side |
| Ditching emergency exit: opening instructions |  | Ditching emergency exit handle: external side |
| Door locking system: by-pass instructions |  | Main door and emergency exit: internal side |

| | | |
|---|---|---|
| Door locking system: by-pass instructions |  | Main door and emergency exit: external side |
| Emergency exit label |  | Emergency exit: internal and external side |
| Main door: exit instructions |  | Main door, internal side |

# SUPPLEMENT NO. G16 - MD302 ALTERNATIVE STAND-BY INSTRUMENT

## RECORD OF REVISIONS

| Rev | Revised page | Description of Revision | Tecnam Approval | | | EASA Approval Or Under DOA Privileges |
|---|---|---|---|---|---|---|
| | | | DO | OoA | HDO | |
| 0 | - | First issue | D. Ronca | C. Caruso | M. Oliva | EASA Approval No. 10058288 |
| 1 | SMD4-15, SMD4-6 | S4-15 replaced by S4-6 | A. Sabino | C.Caruso | M. Oliva | DOA Privileges |
| | SMD2-12 | Cancelled. Information integrated in basic AFM. | | | | |
| | | | | | | |
| | | | | | | |

# LOEP

| | Pages | Revision |
|---|---|---|
| **Cover pages** | G16–1 thru 10 | *Rev. 1* |
| **Section 3** | SMD3 – 15 thru 16 | *Rev. 0* |
| | SMD3 – 30 | *Rev. 0* |
| **Section 4** | SMD4 – 6 | *Rev. 1* |
| **Section 7** | MD7 – 29 | *Rev. 0* |
| | SMD7 – 37 | *Rev. 0* |
| | SMD7 – 39 | *Rev. 0* |

## INTRODUCTION

This section contains supplemental information to operate, in a safe and efficient manner, the aircraft when equipped with Garmin G950 Integrated Flight Deck System (Design Change MOD 2006/002) and with MD302. The MD302 refers to the following design change:

- MOD2006/212 - MD302 Alternative Stand-By Instrument

The information contained herein supplements or supersedes the basic Aircraft Flight Manual or the Supplement G1, as applicable: detailed instructions are provided to allow the owner for replacing the Basic AFM/Supplement G1 pages containing information amended as per the Design Change in subject.

**It is the owner's/operator's responsibility to replace the mentioned pages in the AFM in accordance with the instructions herein addressed section by section.**

**Supplement G16: pages replacement instructions**

## SECTION 1 – GENERAL

Apply following instruction:

**See Basic AFM - Section 1**

**Supplement G16: pages replacement instructions**

## SECTION 2 – LIMITATIONS

Apply following instructions:

**See Basic AFM - Section 2**

**Supplement G16: pages replacement instructions**

## SECTION 3 – EMERGENCY PROCEDURES

Apply following pages replacement procedure:

| Supplement G16 - EMERGENCY PROCEDURES page | | Supplement S1 Section 3 page |
|---|---|---|
| MD3 – 15 thru 16 | **REPLACE** | Page S3–15 thru 16 of Supplement G1, Section 3 |
| MD3 – 30 | **REPLACES** | Page S3–30 of Supplement G1, Section 3 |

## 2.9 LOSS OF INFORMATION DISPLAYED

When a LRU or a LRU function fails, a large red 'X' is typically displayed on the display field associated with the failed data.

**NOTE**

*In most of cases, the red "X" annunciation is accompanied by a message advisory alert issuing a flashing ADVISORY Softkey annunciation which, once selected, acknowledges the presence of the message advisory alert and displays the alert text message in the Alerts Window. Refer to G950 Pilot's Guide for Tecnam P2006T (P/N 190-01146-00), last issue, Appendix A, Message Advisories list.*

## 2.10 LOSS OF AIRSPEED INFORMATION

| | |
|---|---|
|  | **AIRSPEED FAIL**<br>**(RED X ON DISPLAY FIELD)** |
| | Display system is not receiving airspeed input from the Air Data Computer. |

**INSTRUCTION**: revert to stand-by airspeed indicator

## 2.10 LOSS OF ATTITUDE INFORMATION

| | |
|---|---|
|  | **ATTITUDE FAIL**<br>**(RED X ON DISPLAY FIELD)** |
| | Display system is not receiving attitude information from the AHRS. |

**INSTRUCTION**: revert to stand-by attitude indicator

## 2.11 LOSS OF ALTITUDE INFORMATION

| | |
|---|---|
|  | **ALTITUDE FAIL**<br>**(RED X ON DISPLAY FIELD)** |
| | Display system is not receiving altitude input from the Air Data Computer. |

**INSTRUCTION**: revert to stand-by altitude indicator

## 5.3 MD 302 BATTERY FAILURE

WARNING

*The MD302 internal battery will recharge itself from aircraft power while in normal mode. A battery capacity check occurs each time the unit is powered on. If the battery capacity is determined to be less than 80%, there will be a battery pack warning. If the warning persists more than once in a short time the battery must be replaced.*

## 5.4 STATIC PORTS FAILURE

In case of static ports failure, the alternate static port in the cabin (shown below) must be activated.


1. Cabin ventilation — *OFF (hot and cold air)*
2. ALTERNATE STATIC PORT VALVE — *OPEN*
3. Continue the mission

**Supplement G16: pages replacement instructions**

## SECTION 4 – NORMAL PROCEDURES

Apply following pages replacement procedure:

| Supplement G16 - NORMAL PROCEDURES page | | Supplement S1 Section 4 page |
|---|---|---|
| SMD4 – 6 | **REPLACES** | Page S4–6 Supplement G01, Section 4 |


WARNING

*The altitude calculated by G950 GPS receivers is geometric height above Mean Sea Level and could vary significantly from the altitude displayed by pressure altimeters, such as the GDC 74A Air Data Computer, or other altimeters in aircraft. GPS altitude should never be used for vertical navigation. Always use pressure altitude displayed by the G950 PFD or other pressure altimeters in aircraft.*

**NOTE**

*If the pilot profile is changed during the flight, the HSI could not indicate the correct LOC or VOR indication until the pilot manually tunes the active frequency. Make sure that the displayed indication on the HSI indicator is consistent with the selected frequency.*

**NOTE**

*The data contained in the terrain and obstacle databases comes from government agencies. Garmin accurately processes and cross-validates the data, but cannot guarantee the accuracy and completeness of the data. Reference"Garmin G950 Pilot's Guide for the Tecnam P2006T" (P/N 190-01146-XX), last issue, Appendix B concerning SD card use and databases.*

**NOTE**

*Use of polarized eyewear may cause the flight displays to appear dim or blank.*

## MD302 system use


WARNING

*"The detailed description, operation and functionalities of MD302 Stand By Attitude Module are provided on MD302 Stand-By Attitude Module Pilot's Guide" document P/N 9017846 rev.D, which is to be considered to be attached to this AFM and kept onboard the aircraft.*

**Supplement G16: pages replacement instructions**

## SECTION 5 – PERFORMANCE

Apply following instruction:

**See Basic AFM - Section 5**

**Supplement G16: pages replacement instructions**

## SECTION 6 – WEIGHT AND BALANCE

Apply following instruction:

**See Basic AFM - Section 6**

**Supplement G16: pages replacement instructions**

## SECTION 7 – AIRFRAME AND SYSTEMS DESCRIPTION

Apply following pages replacement procedure:

| Supplement G16 - AIRFRAME AND SYSTEM DESCRIPTION page | | Basis AFM/Supplement S1 Section 7 page |
|---|---|---|
| MD7 – 29 | **REPLACES** | Page 7 – 29 of Basic AFM, Section 7 |
| SMD7 – 37 | **REPLACES** | Page 7 – 37 of Supplement S1, Section 7 |
| SMD7 – 39 | **REPLACES** | Page 7 – 39 of Supplement S1, Section 7 |

# 16. MD302 ALTERNATIVE STAND-BY INSTRUMENT

In order to improve the digital version cockpit layout of the P2006T in terms of human-machine interface, weight saving and reliability this backup instrument V.1.0.5 is installed.

For more details refer to MOD2006/212.

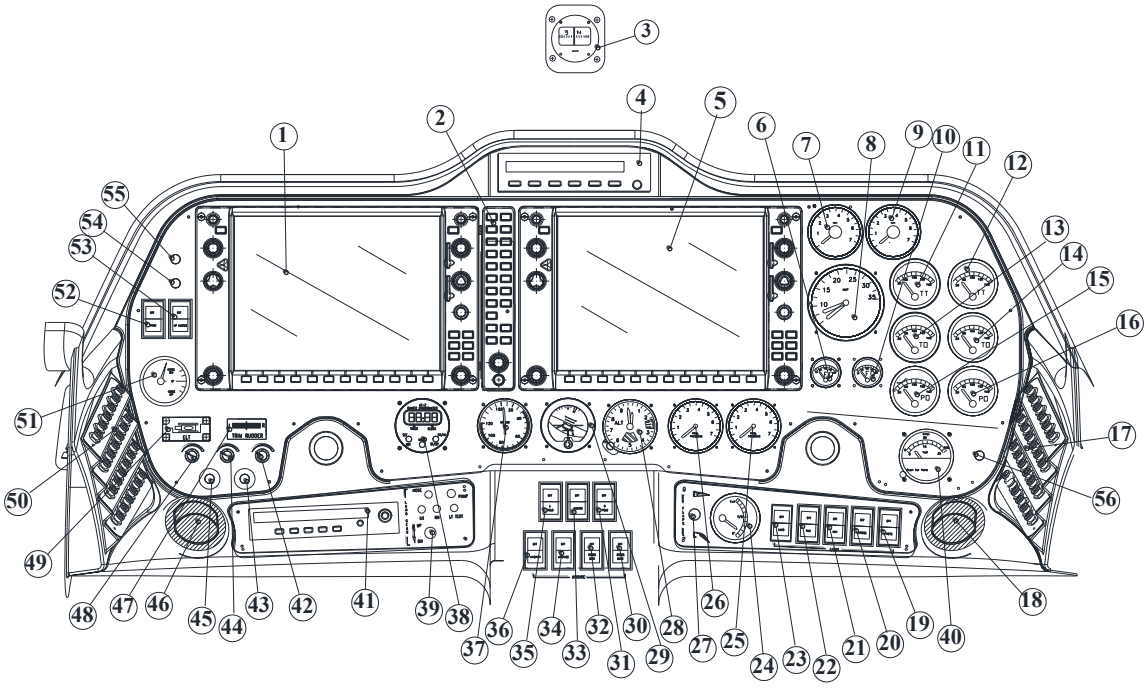
**WARNING**

*All MD302 Stand-by Attitude Module settings, set up during the aircraft delivery or after a maintenance activity, must not be modified.*

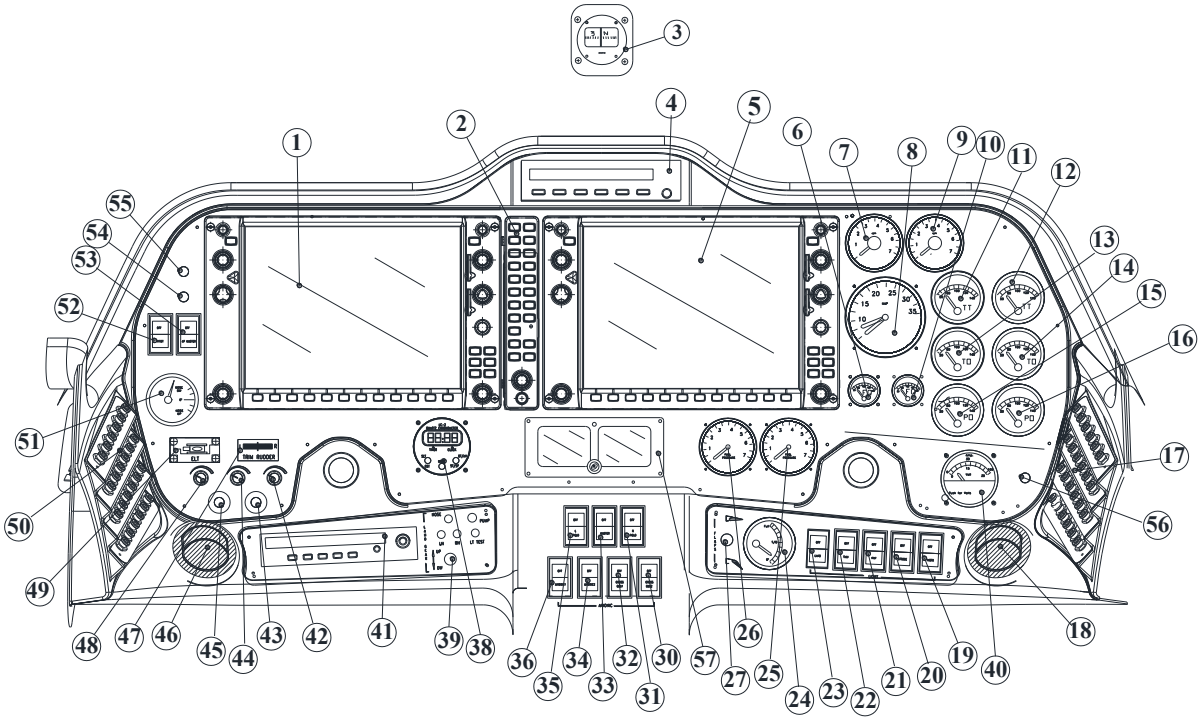
**WARNING**

*In case of replacement of MD302 Stand-by Attitude Module, verify proper software load and confirm that its software version number is compliance with that one showed above, before install it.*

# 17. INSTRUMENTS PANEL



**GARMIN G950 IFDS - Instruments panel (typical layout)**



**GARMIN G950 IFDS - Instruments panel - layout with MD302 digital stand-by instrument(MOD2006/212)**

| Item | Description |
|---|---|
| **31** | RH Field |
| **32** | LH Cross bus switch |
| **33** | Master switch |
| **34** | RH Avionic switch |
| **35** | LH Field |
| **36** | LH Avionic switch |
| **37** | Standby Airspeed indicator |
| **38** | Chronometer |
| **39** | LG control knob |
| **40** | Voltammeter Indicator |
| **41** | ADF control panel |
| **42** | Cockpit light dimmer |
| **43** | Cabin heat (warm air from RH engine) |
| **44** | Avionics lights dimmer |
| **45** | Cabin heat (warm air from LH engine) |
| **46** | LH ram air inlet |
| **47** | Trim rudder indicator |
| **48** | Switches built-in lights dimmer |
| **49** | ELT Indicator |
| **50** | RH breakers panel |
| **51** | Pitch trim indicator |
| **52** | Pitot heat switch |
| **53** | A/P Master switch |
| **54** | A/P trim master switch |
| **55** | Fire Detector push-to-test |
| **56** | LH/RH Ammeter selector switch |
| **57** | Mid-Continent MD302 Stand-By Instrument |

**Supplement G16: pages replacement instructions**

## SECTION 8 – GROUND HANDLING & SERVICE

Apply following instruction:

**See Basic AFM - Section 8**

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# SUPPLEMENT NO. G17 - STORMSCOPE

## RECORD OF REVISIONS

| Rev | Revised page | Description of Revision | Tecnam Approval | | | EASA Approval Or Under DOA Privileges |
|---|---|---|---|---|---|---|
| | | | DO | OoA | HDO | |
| 0 | - | First issue | D. Ronca | C. Caruso | M. Oliva | DOA Approval |
| 1 | all | Page replacement and equipment list suppressed | A. Sabino | C. Caruso | M. Oliva | DOA Approval |
| | | | | | | |
| | | | | | | |

# LOEP

| | Pages | Revision |
|---|---|---|
| **Cover pages** | G17 – 1 thru 6 | *Rev. 1* |

## INTRODUCTION

This supplement contains supplemental information to operate, in a safe and efficient manner, the aircraft when equipped with WX500 Stormscope; this equipment refers to the following design change:

- MOD2006/216 – Stormscope installation

The information contained herein supplements or supersedes the basic Aircraft Flight Manual or the Supplement G1, as applicable.

## SECTION 1 – GENERAL

The following information supplements Section 1 of basic AFM and related supplements.

**NOTE**

*The Stormscope does neither replace a weather radar nor weather information. The Stormscope is only used as an additional source of information beside approved weather information.*

## SECTION 2 – LIMITATIONS

See Section 2 of basic AFM and related supplements.

## SECTION – EMERGENC PROCEDURES

See Section 3 of basic AFM and related supplements.

## SECTION 4 – NORMAL PROCEDURES

See Section 4 of basic AFM and related supplements.

## SECTION 5 – EMERGENC PROCEDURES

See Section 5 of basic AFM and related supplements.

## SECTION 6 – WEIGHT AND BALANCE

See Section 6 of basic AFM and related supplements.

## SECTION AIRFRAME AND S STEMS DESCRIPTION

The following information supplements Section 7 of basic AFM and related supplements.

## WX500 STORMSCOPE SYSTEM

The thunderstorm detection passive sensor WX500 Stormscope is fully operated and displayed via the Garmin G950 Multi function display, in the map menu. Is is installed in order to shown the lightning data.

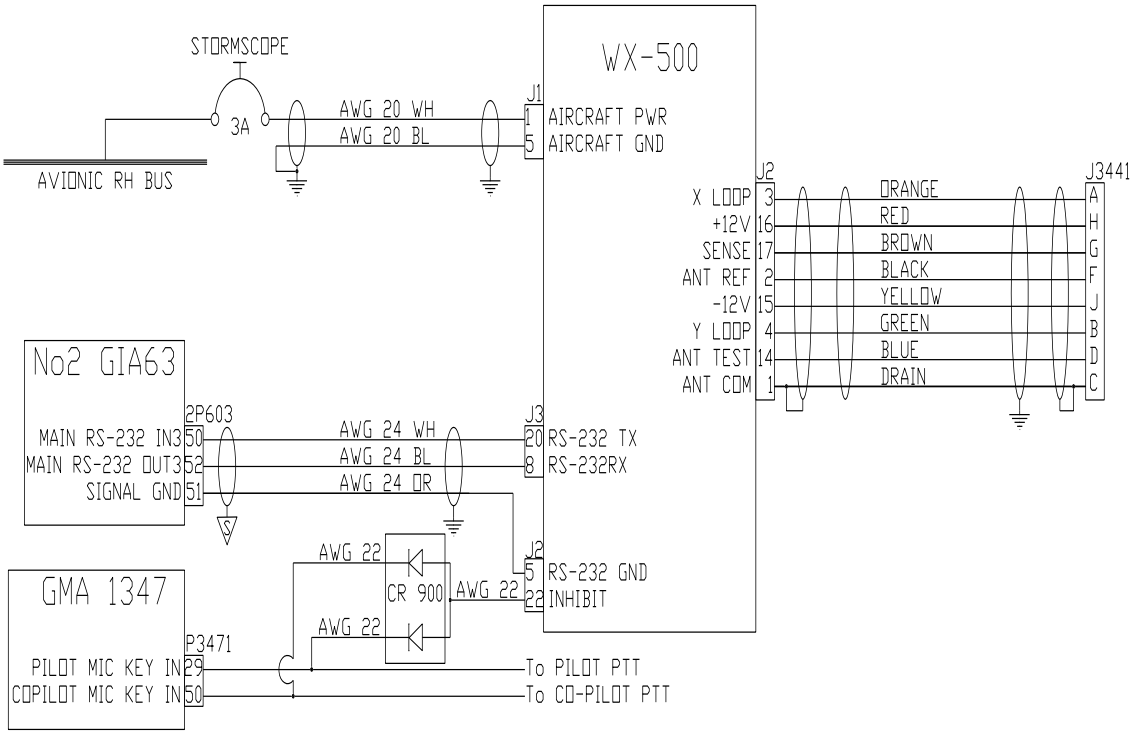
The sensor maps discharge the electrical activity for 360 degrees around the aircraft to a distance of 200 nautical miles, in relation to the aircraft's *Stormscope* antenna. The estimated distance from the aircraft to the discharge point is reported in NM while the bearing represents the angle between the fore and aft axis of the antenna, which is in line with the longitudinal axis (nose) of the aircraft.

The WX-500 processor is installed in the right side of the baggage compartment while the NY-163 antenna is installed on the bottom side of the tail.

For more details see WX-500 Installation Manual and the latest revision of the Garmin G950 Pilot's guide Doc. No.: 190-00726-00.

### W D C

In the following figure the *Stormscope* wiring diagram is reported.




**Wiring diagram**

## SECTION 8 – AIRCRAFT CARE AND MAINTENANCE

See Section 8 of basic AFM and related supplements.

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# SUPPLEMENT No. G19

# G1000 NXi, Increased MTOW, Increased $V_{LE}/V_{LO}$ and MD302

## RECORD OF REVISIONS

| Rev | Revised page | Description of Revision | Tecnam Approval | | | EASA Approval or Under DOA Privileges |
|---|---|---|---|---|---|---|
| | | | DO | OoA | HDO | |
| 0 | - | Initial issue | A. Sabino | C. Caruso | M. Oliva | EASA Approval N° 10062361 |
| 1 | S2-6,8,12,16 | Suppressed, information reported in basic AFM | A. Sabino | C. Caruso | M. Oliva | DOA Approval |
| | S4-3,4,13,18, 19,21,22,24, 27 | Oil T indication for MOD 2006/002 and Recommendations for governor check | | | | |
| | | | | | | |
| | | | | | | |

# LOEP

| | Pages | Revision |
|---|---|---|
| **Cover pages** | G19-1,2,7 | Rev 1 |
| | 3 thru 6, 8 thru 20 | Rev 0 |
| **Section S2** | 5,7, 13 thru 15, 21,22,29,30 | Rev 0 |
| **Section S3** | 1 thru 62 | Rev 0 |
| **Section S4** | 3,4,13,18,19,21,22,24,27 | Rev 1 |
| | 1,2,5 thru 12,14 thru 17, 20, 23, 25,28 thru 38 | Rev 0 |
| **Section S5** | 1 thru 22 | Rev 0 |
| **Section S7** | 1, 2, 29 thru 42 | Rev 0 |

## INTRODUCTION

This section contains supplemental information to operate, in a safe and efficient manner, the aircraft when equipped with the following design changes:

- Weight Increment (Design Change MOD2006/015)
- $V_{LE}$ and $V_{LO}$ Increment (Design Change MOD2006/033)
- MD302 Alternative Stand-By Instrument (Design Change MOD2006/212)
- Garmin G1000 NXi Avionic Suite (Design Change MOD2006/271).

The information herein contained supplements or supersedes the basic Aircraft Flight Manual: detailed instructions are provided to allow the owner for replacing the AFM pages containing information amended as per the Design Change in subject.

**It is the owner's responsibility to replace the mentioned pages in the AFM in accordance with the instructions herein addressed section by section.**

**CAUTION**

*Garmin G1000 NXi Pilot's Guide for Tecnam P2006T (P/N 190-02286-00) – last issue – must be carried on board the airplane at all times.*

**CAUTION**

*MD302 Stand-By Attitude Module Pilot's Guide" document P/N 9017846 rev.D is to be considered to be attached to this AFM and kept onboard the aircraft.*

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**Supplement G19: pages replacement instructions**

# SECTION 1 - GENERAL

**See Basic AFM - Section 1**

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**Supplement G19: pages replacement instructions**

# SECTION 2 - LIMITATIONS

Apply following pages replacement procedure:

| **Supplement G19 – LIMITATIONS page** | | **Basic AFM Section 2 page** |
|---|---|---|
| S2-5 | **REPLACES** | 2-5 |
| S2-7 | **REPLACES** | 2-7 |
| S2-13 | **REPLACES** | 2-13 |
| S2-14 | **REPLACES** | 2-14 |
| S2-15 | **REPLACES** | 2-15 |
| S2-21 | **REPLACES** | 2-21 |
| S2-22 | **REPLACES** | 2-22 |
| S2-29 | **REPLACES** | 2-29 |
| S2-30 | **REPLACES** | 2-30 |

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## 2. SPEED LIMITATIONS

The following table addresses the airspeed limitations and their operational significance:

| SPEED | | | KIAS | KCAS | REMARKS |
|---|---|---|---|---|---|
| $V_{NE}$ | Never exceed speed | | 171 | 172 | Do not exceed this speed in any operation. |
| $V_{NO}$ | Maximum Structural Cruising Speed | | 138 | 136 | Do not exceed this speed except in smooth air, and only with caution. |
| $V_A$ | Design Manoeuvring speed | | 122 | 119 | Do not make full or abrupt control movement above this speed, because under certain conditions the aircraft may be overstressed by full control movement. |
| $V_O$ | Operating Manoeuvring speed | | | | |
| $V_{LE}$ | Maximum Landing Gear extended speed | | 122 | 119 | Do not exceed this speed with the landing gear extended. |
| $V_{LO}$ | Maximum Landing Gear operating speed | | 122 | 119 | Do not exceed this speed when operating the landing gear. |
| $V_{FE}$ | Maximum flaps extended speed | ***FULL*** | 93 | 93 | Do not exceed this speed for indicated flaps setting. |
| | | ***T.O.*** | 122 | 119 | |
| $V_{MC}$ | Aircraft minimum control speed with one engine inoperative | | 62 | 62 | Do not reduce speed below this value in event of one engine inoperative condition. |

## 3. AIRSPEED INDICATOR MARKINGS

The Airspeed Indicator displays airspeed on a rolling number gauge using a moving tape.

The airspeed is displayed inside the black pointer. The pointer remains black until reaching never-exceed speed ($V_{NE}$), at which point it turns red.

Airspeed indicator markings and their colour code are explained in the following table.

| MARKING | KIAS | EXPLANATION |
|---|---|---|
| White band | **54-93** | Lower limit is $V_{SO}$, upper limit is the maximum allowable speed with flaps extended in *FULL* position. |
| Red line | **62** | Minimum aircraft control speed with one engine inoperative and flaps set to T.O. |
| Green band | **66-138** | Normal aircraft operating range (lower limit is $V_{S1}$, stall speed in "clean" configuration, and upper limit is the maximum structural cruise speed $V_{NO}$). |
| Blue line | **84** | Best rate-of-climb speed with one engine inoperative. |
| Yellow band | **138-171** | Speed range where manoeuvres must be conducted with caution and only in smooth air. |
| Red line | **171** | Maximum speed for all operations. |

## 13. WARNINGS, CAUTIONS AND ADVISORIES LIGHTS

Following table addresses the warning and caution alerts and safe operating annunciations shown (unless differently specified) on the Annunciation Window:

| **Warning alert (RED)** | **Cause** |
|---|---|
| L BUS VOLT HIGH | LH electric system overvoltage |
| R BUS VOLT HIGH | RH electric system overvoltage |
| L COOLANT LOW | Left engine - coolant liquid low level |
| L COOLANT LOW | Right engine - coolant liquid low level |
| PILOT DR OPEN | Main door open and/or unlocked |
| REAR DR OPEN | Rear door open and/or unlocked |
| LH ENGINE FIRE | Left engine compartment: fire detected |
| RH ENGINE FIRE | Right engine compartment: fire detected |
| LG TRANSITION | One or more legs are in transition phase and/or the selected retracted/extended position is not yet reached |
| **Caution alert (AMBER)** | **Cause** |
| L ALT FAIL | LH generator failure |
| R ALT FAIL | RH generator failure |
| PITOT HEAT | Pitot heating system failure/not activated |
| EXT POWER ON | External electrical supply connected |
| GEAR PUMP ON | LG pump electrically supplied |
| **Safe operating annunciation (GREEN)** | **Indication** |
| L FUEL PUMP ON | Left engine - electrical fuel pump ON |
| R FUEL PUMP ON | Right engine - electrical fuel pump ON |
| PITOT HEAT ON | Pitot heating system ON |
| LG Down & Locked | Landing gear extended and locked |

Aural means are provided by Garmin G1000 NXi: a repeating tone is associated to the warning alerts and a single chime is associated to the caution alerts. Safe operating annunciations do not have any aural chime generated.

Make reference to Garmin G1000 NXi Pilot's Guide for P2006T (P/N 190-02286-00), last issue.

## 14 WEIGHTS

| Condition | Weight | |
|---|---|---|
| Maximum takeoff weight | 1230 kg | 2712 lb |
| Maximum landing weight | 1230 kg | 2712 lb |
| Maximum zero wing fuel weight | 1195 kg | 2635 lb |

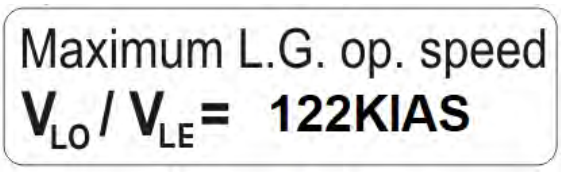
NOTE *Refer to Para. 21.4 of this AFM Section for baggage loading limitations.*

## 21. LIMITATIONS PLACARDS

Hereinafter the placards, related to the operating limitations and installed on ***P2006T***, are reported.

### 21.1. SPEED LIMITATIONS

On the left side instrument panel, the following placards reporting the speed limitations are placed:

## 21.2. OPERATING LIMITATIONS

On the instrument panel, it is placed the following placard reminding the observance of aircraft operating limitations; make reference to Para. 22 for the list of equipment required on board to allow flight operations in VFR Day, VFR Night, IFR Day and IFR Night conditions.

This A/C can be operated only in normal category DAY-NIGHT-VFR-IFR (with required equipment) in non-icing conditions. All aerobatics manoeuvres including spinning are prohibited. For operational limitations refer to FLIGHT MANUAL

## 22. KINDS OF OPERATIONS EQUIPMENT LIST

This paragraph reports the KOEL table, concerning the equipment list required on board under CS-23 regulations to allow flight operations in VFR Day, VFR Night, IFR Day and IFR Night conditions.

Flight in VFR Day and Night, IFR Day and Night is permitted only if the prescribed equipment is installed and operational.

Additional equipment, or a different equipment list, for the intended operation may be required by national operational requirements and also depends on the route to be flown.

| Equipment | VFR Day | VFR Night | IFR Day | IFR Night |
|---|---|---|---|---|
| **Magnetic compass** | ● | ● | ● | ● |
| **GDU 1050 - Display Unit (2)** | ● | ● | ● | ● |
| **GIA 63W - Integrated Avionics Unit (2)** | ● | ● | ● | ● |
| **GDC 72 - Air Data Computer** | ● | ● | ● | ● |
| **GTP 59 - OAT sensor** | ● | ● | ● | ● |
| **GRS 79 - AHRS** | ● | ● | ● | ● |
| **GMU 44 - Magnetometer** | ● | ● | ● | ● |
| **GMA 1347 - Audio panel / MKR Receiver** | ● | ● | ● | ● |
| **GTX 345R - Transponder** | ● | ● | ● | ● |
| **MD-302 - Standby Attitude Module** | ● | ● | ● | ● |
| **Pitot heating system** | ● | ● | ● | ● |
| **Breakers panels** | ● | ● | ● | ● |
| **First Aid kit** | ● | ● | ● | ● |
| **Fire extinguisher** | ● | ● | ● | ● |
| **Fire detectors (2)** | ● | ● | ● | ● |
| **Position lights** | ● | ● | ● | ● |
| **Landing light** | ● | ● | ● | ● |
| **Taxi light** | ● | ● | ● | ● |
| **Strobe lights** | ● | ● | ● | ● |
| **Torch** | | ● | ● | ● |
| **Cabin light** | | ● | ● | ● |
| **Panel lights** | | ● | ● | ● |
| **Map lights** | | ● | ● | ● |
| **Cockpit lights** | | ● | ● | ● |
| **Emergency light** | ● | ● | ● | ● |
| **Volt-Ammeter** | ● | ● | ● | ● |
| **ELT** | ● | ● | ● | ● |
| **Alternate static source** | ● | ● | ● | ● |
| **Stall warning system** | ● | ● | ● | ● |
| **KN63 - DME** | | | ● | ● |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | VFR Day | VFR Night | IFR Day | IFR Night |

**Supplement G19: pages replacement instructions**

# SECTION 3 - EMERGENCY PROCEDURES

**Supplement G19 Section 3 – EMERGENCY PROCEDURES**
**replaces Basic AFM Section 3 as a whole**

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# SECTION 3 – EMERGENCY PROCEDURES

INDEX

# 1. INTRODUCTION

Section 3 includes checklists and detailed procedures for coping with various types of emergency conditions that could arise after a system failure.

Before operating the aircraft, the pilot should become thoroughly familiar with this manual and, in particular, with this Section. Further on a continued and appropriate training and self study should be done.

Two types of emergency procedures are hereby given.

a. "BOLD FACES" which must be known by heart by the pilot and executed, in the correct and complete sequence, immediately after the failure is detected and confirmed.
These procedures characters are boxed and highlighted:

## 1.1. ENGINE FAILURE DURING TAKEOFF RUN

**BEFORE ROTATION: ABORT TAKE OFF**

| | | |
|---|---|---|
| 1. | **Throttle Lever** | ***BOTH IDLE*** |
| 2. | **Rudder** | ***Keep heading control*** |
| 3. | - - | |
| 4. | - - | |

b. "other procedures" which should be well theoretically known and mastered, but that can be executed entering and following step by step the AFM current section appropriate checklist.

Additionally operating the aircraft, the pilot should become thoroughly familiar with the Garmin G1000 NXI Pilot's Guide for Tecnam P2006T(P/N 190-02286-00) – last issue - and, in particular, with the present AFM Section.

**CAUTION**

*Garmin G1000 NXI Pilot's Guide for Tecnam P2006T (P/N 190-02286-00) – last issue - must be carried onboard the airplane at all times.*


WARNING

*Garmin G1000 NXI has a very high degree of functional integrity. However, the pilot must recognize that providing monitoring and/or self-test capability for all conceivable system failures is not practical. Although unlikely, it may be possible for erroneous operation to occur without a fault indication shown by the G1000 NXI. It is thus the responsibility of the pilot to detect such an occurrence by means of crosschecking with all redundant or correlated information available in the cockpit.*

***In any case, as a failure or abnormal behaviour is detected pilots should act as follows:***

1. *Keep self-control and maintain aircraft flight attitude and parameters*
2. *Analyse the situation identifying, if required, the area for a possible emergency landing*
3. *Apply the pertinent procedure*
4. *Inform the Air Traffic Control as applicable*

NOTE

*For the safe conduct of later flights, any anomaly and/or failure must be communicated to the National Authorities in charge, in order to put the aircraft in a fully operational and safe condition.*

NOTE

*In this Chapter, following definitions apply**:***
***Land as soon as possible**: land without delay at the nearest suitable area at which a safe approach and landing is assured.*
***Land as soon as practical**: land at the nearest approved landing area where suitable repairs can be made.*

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## 2. AIRPLANE ALERTS

Annunciation Window, located to the right of the Altimeter and Vertical Speed Indicator, supplies 16 alerts for warnings and cautions along with safe operating annunciations. The colours are as follows:

**GREEN:** to indicate that pertinent device is turned ON
**AMBER:** to indicate no-hazard situations which have to be considered and which require a proper crew action
**RED:** to indicate emergency conditions

**Warning** alert text is shown in red in the Annunciation Window and is accompanied by a continuous chime and a flashing WARNING Softkey annunciation. Selecting the WARNING Softkey acknowledges the presence of the warning alert and stops the aural chime.

**Caution** alert text is shown in yellow in the Annunciation Window and is accompanied by a single chime and a flashing CAUTION Softkey annunciation. Selecting the CAUTION Softkey acknowledges the presence of the caution alert. Caution voice alerts repeat three times or until acknowledged by selecting the CAUTION Softkey.

All aircraft annunciations can be displayed simultaneously in the Annunciation Window. A white horizontal line separates annunciations that are acknowledged from annunciations that are not yet acknowledged. Higher priority annunciations are displayed towards the top of the window.

In order to give a short description about the airplane alerts, text messages are displayed on the Alerts Window: pressing the ALERTS Softkey displays the Alerts Window, pressing the ALERTS Softkey a second time removes the Alerts Window from the display. When the Alerts Window is displayed, the FMS knob can be used to scroll through the alert message list.

## 2.1 SINGLE ALTERNATOR FAILURE / OVERVOLTAGE

| Annunciation window | Alert window |
|---|---|
| L ALT FAIL | Lh Alternator |

OR

| | |
|---|---|
| R ALT FAIL | Rh Alternator |

1. FIELD LH (or RH) *OFF*
2. FIELD LH (or RH) *ON*

**If the LH (or RH) ALT caution stays displayed**

***3.*** FIELD LH (or RH) *OFF*
***4.*** Avionic LH *OFF*
5. ADF (if installed) *OFF*

NOTE

*Switching OFF avionic LH and ADF (if installed) will permit to shed non-essential electrical power.*
*The battery and a single generator are able to supply the electrical power necessary for flight, but redundancy is lost.*

**If conditions permit:**

NOTE

*Switching CROSS BUS OFF will further reduce alternator load; the decision mainly depends on weather conditions.*

6. CROSS BUS LH (or RH) OFF

Equipment will be lost accordingly to the following table:

| LH Gen Bus | LH Avionic Bus | RH Avionic Bus | RH Gen Bus |
|---|---|---|---|
| Pitot Heat | DME | ADF (in installed) | NAV Lights |
| Landing Light | Transponder | COM 2 | Rudder Trim |
| Taxi Light | A/P | NAV 2 | Stall Warning |
| | A/P Pitch Trim | MFD | |
| | | AHRS/ADC* | |

** AHRS /ADC are fed from battery bus if Mod 2006/135 is embodied*

*7.* Land as soon as practicable

## 2.2 BOTH ALTERNATORS FAILURE

| Annunciation window | Alert window |
|---|---|
| L ALT FAIL | Lh Alternator |
| R ALT FAIL | Rh Alternator |

In event of both L and R ALT FAIL caution alerts displayed:

1. FIELD LH and RH *BOTH OFF*
2. FIELD LH and RH *BOTH ON*

**If the LH (or RH) ALT caution stays displayed**

1. Verify good ammeter indications on restored alternator
2. Refer to Single alternator failure / overvoltage drill (Para 2.1)

**If both LH and RH ALT cautions stay displayed**

3. FIELD LH and RH *BOTH OFF*
4. CROSS BUS LH and RH *BOTH OFF*

**If engine starting battery modification is applied**

5. EMERG BATT switch ON
6. **Land as soon as possible.**

**If engine starting battery modification is not applied**

5. **Land as soon as possible.**

Equipment will be lost accordingly to the following table:

| LH Gen Bus | LH Avionic Bus | RH Avionic Bus | RH Gen Bus |
|---|---|---|---|
| Pitot Heat | DME | ADF (if installed) | NAV Lights |
| Landing Light | Transponder | COM 2 | Rudder Trim |
| Taxi Light | A/P | NAV 2 | Stall Warning |
| | A/P Pitch Trim | MFD | |
| | | AHRS/ADC* | |

*AHRS/ADC are fed from battery bus if Mod 2006/135 is embodied*

NOTE *The battery can supply electrical power for at least 30 minutes.*

## 2.3 BOTH ALTERNATORS OVERVOLTAGE

| Annunciation window | Alert window |
|---|---|
| L BUS VOLT HIGH | Lh overvoltage |
| R BUS VOLT HIGH | Rh overvoltage |

In event of both L and R BUS VOLT HIGH warning alerts displayed:

1. FIELD LH and RH *BOTH OFF*
2. FIELD LH and RH *BOTH ON (one at a time)*

**If the LH (or RH) BUS VOLT HIGH warning is still displayed**

3. Verify good ammeter indications on restored alternator
4. Refer to Single alternator failure / overvoltage drill (Para 2.1)

**If both LH and RH BUS VOLT HIGH warning are still displayed**

3. CROSS BUS LH and RH BOTH OFF
4. FIELD LH and RH BOTH OFF
5. FIELD LH and RH BOTH ON (one at a time)

**If LH (or RH) BUS VOLT HIGH warning is still displayed**

6. Verify good ammeter indications on restored alternator
7. Switch CROSS BUS on the restored alternator side
8. Refer to Single alternator failure / overvoltage drill (Para 2.1)

**If both LH and RH BUS VOLT HIGH warning are still displayed**

6. FIELD LH and RH *BOTH OFF*

**If engine starting battery modification is applied**

7. EMERG BATT switch ON
8. **Land as soon as possible.**

**If engine starting battery modification is not applied**

7. **Land as soon as possible**

Equipment will be lost accordingly to the following table:

| LH Gen Bus | LH Avionic Bus | RH Avionic Bus | RH Gen Bus |
|---|---|---|---|
| Pitot Heat | DME | ADF (if installed) | NAV Lights |
| Landing Light | Transponder | COM 2 | Rudder Trim |
| Taxi Light | A/P | NAV 2 | Stall Warning |
| | A/P Pitch Trim | MFD | |
| | | AHRS/ADC* | |

*AHRS /ADC are fed from battery bus if Mod 2006/135 is embodied*

NOTE *The battery can supply electrical power for at least 30 minutes.*

## 2.4 FAILED DOOR CLOSURE

| Annunciation window | Alert window |
|---|---|
| PILOT DR OPEN | Main door open |

OR

| | |
|---|---|
| REAR DR OPEN | Rear door open |

In case of door opening / unlocking, related PILOT or REAR DR OPEN alert is displayed. In this case, apply following procedure:

**ON THE GROUND**

1. Passengers and crew seat belts — *Fasten and tighten*
2. Affected door — *Verify correctly closed*

***If door is open***

3. Relevant engine — *Shut down*
4. Affected door — *Close and check*

***If door is closed***

3. Locking device — *Check*

***If down in unlocked position***

4. Abort mission.

**IN FLIGHT**

1. Passengers and crew seat belts — *Fasten and tighten*
2. Affected door and locked device — *Verify correctly closed*

***If door is open or locking device is unlocked***

***3.*** **Land as soon as possible**

## 2.5 PITOT HEATING SYSTEM FAILURE

| Annunciation window | Alert window |
|---|---|
| PITOT HEAT ON | Pitot heat |
| PITOT HEAT | Pitot heat |

When the Pitot Heating system is activated, the green PITOT HEAT advisory light is turned ON.
If the amber PITOT HEAT caution light turns OFF, then the Pitot Heating system is functioning properly. Anytime the amber PITOT HEAT caution light is ON at the same time the green PITOT HEAT light is ON, then the Pitot Heating system is not functioning properly.

1. Pitot heat switch *OFF*
2. Verify Pitot Heating circuit breaker is IN
3. Pitot heat switch *ON*
4. Check PITOT HEAT caution light:

   If the amber light stays ON, assume a failure in the pitot heating system. Avoid visible moisture and OATs below 10 deg C.

## 2.6 COOLANT LIQUID LOW LEVEL

| Annunciation window | Alert window |
|---|---|
| L COOLANT LOW | Lh Low Coolant |
| OR | |
| R COOLANT LOW | Rh Low Coolant |

When the engine coolant liquid level goes under the lower limit, the related L or R COOLANT LOW warning alert is displayed. Low coolant level condition may lead to high CHT/CT. When the warning is displayed, apply following procedure:

1. Check affected engine CHT/CT

***If CHT is above 135°C or CT is above 120°C***

2. Affected engine — *Reduce power setting to reduce CHT/CT up to the minimum practical*
3. **Land as soon as practical**

***If CH/CT continues to rise and engine shows roughness or power loss***

4. Affected engine — *SECURE (securing procedure on Para. 4)*
5. **Land as soon as possible** applying *one engine inoperative landing* procedure. See Para. 6.6

## 2.7 GEAR PUMP FAILURE

| Annunciation window | Alert window |
|---|---|
| GEAR PUMP ON | Gear powered |

The GEAR PUMP ON caution light turns ON when the landing gear hydraulic pump is electrically supplied.

After the landing gear retraction, if the red TRANS light turns OFF and the GEAR PUMP ON caution stays turned ON, this could indicate a gear pump relay failure to ON.

**If TRANS light is OFF**

1. Continue the mission monitoring the caution light.

**If TRANS light is ON**

2. Landing gear is not locked in UP position

NOTE

*The electrical gear pump, continuously supplied, causes a current absorption which does not affect the mission unless this failure is coupled with the overall electrical failure. In this case, the residual battery endurance may be consistently lower than 30 minutes.*

## 2.8 ENGINE FIRE

| Annunciation window | Alert window |
|---|---|
| LH ENGINE FIRE | Left engine fire detected |
| OR | |
| RH ENGINE FIRE | Right engine fire detected |

In event of engine fire, the LH or RH ENGINE FIRE warning alert is displayed.
Refer to following procedures:

FIRE ON THE GROUND: see Para. 8.1
FIRE DURING TAKEOFF RUN: see Para. 8.2
FIRE IN FLIGHT: see Para. 8.3

## 2.9 LOSS OF INFORMATION DISPLAYED

When a LRU or a LRU function fails, a large red 'X' is typically displayed on the display field associated with the failed data.

NOTE

*In most of cases, the red "X" annunciation is accompanied by a message advisory alert issuing a flashing ADVISORY Softkey annunciation which, once selected, acknowledges the presence of the message advisory alert and displays the alert text message in the Alerts Window. Refer to G1000 NXI Pilot's Guide for Tecnam P2006T (P/N 190-02286-00), last issue, Appendix A, Message Advisories list.*

## 2.10 LOSS OF AIRSPEED INFORMATION

| | |
|---|---|
|  | **AIRSPEED FAIL**<br>**(RED X ON DISPLAY FIELD)** |
| | Display system is not receiving airspeed input from the Air Data Computer. |

**INSTRUCTION**: revert to standby airspeed indicator

## 2.11 LOSS OF ATTITUDE INFORMATION

| | |
|---|---|
|  | **ATTITUDE FAIL**<br>**(RED X ON DISPLAY FIELD)** |
| | Display system is not receiving attitude information from the AHRS. |

**INSTRUCTION**: revert to standby attitude indicator

## 2.12 LOSS OF ALTITUDE INFORMATION

| | |
|---|---|
|  | **ALTITUDE FAIL**<br>**(RED X ON DISPLAY FIELD)** |
| | Display system is not receiving altitude input from the Air Data Computer. |

**INSTRUCTION**: revert to standby altitude indicator

## 2.13 Loss of vertical speed information

| | |
|---|---|
|  | **VERT SPEED FAIL**<br>**(RED X ON DISPLAY FIELD)** |
| | Display system is not receiving vertical speed input from the Air Data Computer. |

**INSTRUCTION**: determine vertical speed on the basis of altitude information

## 2.14 Loss of heading information

| | |
|---|---|
|  | **HDG**<br>**(RED X ON DISPLAY FIELD)** |
| | Display system is not receiving valid heading input from AHRS. |

**INSTRUCTION**: revert to magnetic compass

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## 2.15 DISPLAY FAILURE

In the event of a display failure, the G1000 NXi System automatically switches to reversionary (backup) mode. In reversionary mode, all important flight information is presented on the remaining display in the same format as in normal operating mode. The change to backup paths is completely automated for all LRUs and no pilot action is required.

**if the system fails to detect a display problem**

1. DISPLAY BACKUP button *PUSH*

**CAUTION**

*If a display fails, the related Integrated Avionics Unit (IAU) is cut off and can no longer communicate with the remaining display: consequently the NAV and COM functions provided to the failed display by the Integrated Avionics Unit are flagged as invalid on the remaining display.*

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## 3. ENGINE SECURING

Following procedure is applicable to shut-down one engine in flight:

| | | |
|---|---|---|
| 1. | **Throttle Lever** | ***IDLE*** |
| 2. | **Ignition** | ***BOTH OFF*** |
| 3. | **Propeller Lever** | ***FEATHER*** |
| 4. | **Fuel Selector** | ***OFF*** |
| 5. | **Electrical fuel pump** | ***OFF*** |

After securing engine(s), after analysing situation, refer immediately to following procedures:

| | |
|---|---|
| ENGINE FAILURE IN FLIGHT: | see Para. 6.5 |
| SINGLE GENERATOR FAILURE: | see Para. 2.1 |
| or BOTH GENERATOR FAILURE: | see Para. 2.2 |
| INFLIGHT ENGINE RESTART: | see Para. 6.2 |
| ONE ENGINE INOPERATIVE LANDING: | see Para. 6.6 |
| or LANDING WITHOUT ENGINE POWER: | see Para. 10.1 |

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# 4. POWERPLANT EMERGENCIES

## 4.1 PROPELLER OVERSPEEDING

The aircraft is fitted with propeller/governor set by MT-Propeller such a way that the maximum propeller rpm exceedance is prevented. In case of propeller over-speeding in flight, apply following procedure:

| | | |
|---|---|---|
| 1. | Throttle Lever | *REDUCE power to minimum practical* |
| 2. | Propeller Lever | *REDUCE as practical (not in feathering)* |
| 3. | RPM indicator | *CHECK* |

If it is not possible to decrease propeller rpm, apply *engine securing procedure* (see Para. 3) and **land as soon as possible** applying *one engine inoperative landing* procedure (See Para. 6.6).

**CAUTION**

*Maximum propeller rpm exceedance may cause the engine components damage. Propeller and engine shall be inspected in accordance with related Operators Manuals.*

### 4.2 CHT LIMIT EXCEEDANCE

If CHT/CT exceeds its limit, apply following procedure:

1. Check affected engine CHT/CT

***If CHT is above 135°C or CT is above 120°C***

2. Affected engine — *Reduce power setting to reduce CHT/CT up to the minimum practical*
3. **Land as soon as practical**

***If CHT/CT continues to rise and engine shows roughness or power loss***

4. Affected engine — *SECURE (securing procedure on Para. 3)*
5. **Land as soon as possible** applying *one engine inoperative landing* procedure. See Para. 6.6

### 4.3 OIL TEMPERATURE LIMIT EXCEEDANCE

If oil temperature exceeds maximum limit (130°C):

1. OIL PRESS *CHECK*

**If oil pressure is within limits**

2. Affected engine *Reduce power setting to minimum applicable*
3. Affected engine *Keep propeller speed higher than 2000 RPM*

**If oil pressure does not decrease**

4. Airspeed *INCREASE*

NOTE

*If oil temperature does not come back within limits, the thermostatic valve, regulating the oil flow to the heat exchangers, could be damaged or an oil leakage can be present in the oil supply line.*

5. **Land as soon as practical** keeping the affected engine to the minimum necessary power
6. Monitor OIL PRESS and CHT/CT

**if engine roughness / vibrations or erratic behaviour is detected:**

7. Affected engine *SECURE (engine securing procedure on Para. 3)*
8. **Land as soon as possible** applying *one engine inoperative landing* procedure. See Para. 6.6

WARNING

*Excessive oil pressure drop leads to a high pitch propeller configuration with consequent propeller feathering and engine stopping.*

### 4.4 OIL PRESSURE LIMITS EXCEEDANCE

If oil pressure exceeds its lower or upper limit (0.8 – 7 bar), apply following procedure:

**WARNING**

*Excessive oil pressure drop leads to a high pitch propeller configuration with consequent propeller feathering and engine stopping.*

NOTE

*An excessive oil pressure value can be counteracted by decreasing propeller rpm.*

1. OIL PRESS *CHECK*

**If oil pressure exceeds upper limit (7 bar)**

2. Throttle Lever *first REDUCE affected engine power by 10%*
3. Propeller Lever *Keep low rpm*
4. OIL PRESS *CHECK (verify if came back within the limits)*
5. **Land as soon as practical**

**If oil pressure is under the lower limit (0.8 bar)**

2. **Land as soon as practical**

**If oil pressure is continuously decreasing**

3. **Affected engine** *SECURE (see engine securing procedure on Para. 3)*
4. **Land as soon as possible** applying *one engine inoperative landing* procedure. See Para. 6.6

## 4.5 LOW FUEL PRESSURE

If fuel pressure decreases below the lower limit (2.2 psi), apply following procedure:

1. Fuel press *CHECK*
2. Fuel quantity *CHECK*
3. Fuel consumption *MONITOR*

**If a fuel leakage is deemed likely**

5. **Land as soon as possible**.

**If a fuel leakage can be excluded:**

4. Electrical fuel pump *ON*
5. Feed the affected engine by means of opposite side fuel tank

**If pressure does not come back within the limits**

6. **Land as soon as practical**

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# 5. OTHER EMERGENCIES

## 5.1 EMERGENCY DESCENT


CAUTION

*Descent with airspeed at VLE, idle power and gear down will provide high descent rates and pitch attitudes up to -15°.*

*Anticipate altitude capture and return to level flight during emergency descent in order to assure a safe and smooth recovery from maneuver.*

| | | |
|---|---|---|
| 1. | Power levers | *IDLE* |
| 2. | Flaps | *UP* |
| 3. | IAS | *below VLO/VLE* |
| 4. | Landing gear | *DOWN* |
| 5. | Airspeed | *Up to VLE* |

## 5.2 TOTAL ELECTRICAL FAILURE

In case of electrical system overall failure, apply following procedure:

| | | |
|---|---|---|
| 1. | Emergency light | *ON if necessary* |
| 2. | MASTER SWITCH | *OFF* |
| 3. | FIELD LH and RH | *BOTH OFF* |
| 4. | MASTER SWITCH | *ON* |
| 5. | FIELD LH and RH | *BOTH ON* |

**If failure persists**

| | | |
|---|---|---|
| 9. | EMERG BATT switch | ON (if engine starting battery installed) |

10. **Land as soon as possible** applying *emergency landing gear extension* procedure (see Para. 7.1)


WARNING

*An electrical system overall failure prevents flaps operation: landing distance without flaps increases of about 25%.*


CAUTION

*A fully charged battery can supply electrical power for at least 30 minutes.*

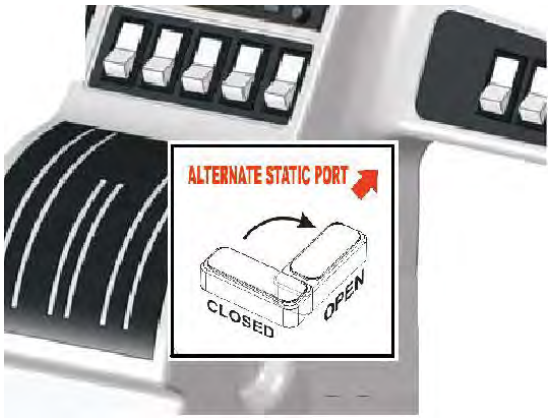
## 5.3 MD 302 BATTERY FAILURE

**WARNING**

*The MD302 internal battery will recharge itself from aircraft power while in normal mode. A battery capacity check occurs each time the unit is powered on. If the battery capacity is determined to be less than 80%, there will be a battery pack warning. If the warning persists more than once in a short time the battery must be replaced.*

## 5.4 STATIC PORTS FAILURE

In case of static ports failure, the alternate static port in the cabin (shown below) must be activated.




1. Cabin ventilation — *OFF (hot and cold air)*
2. ALTERNATE STATIC PORT VALVE — *OPEN*
3. Continue the mission

## 5.4 UNINTENTIONAL FLIGHT INTO ICING CONDITIONS

1. Carburettor heat — *BOTH ON*
2. Pitot heat — *ON*
3. Fly as soon as practical toward a zone clear of visible moisture, precipitation and with higher temperature, changing altitude and/or direction.
4. Control surfaces — *Move continuously to avoid locking*
5. Propellers rpm — *INCREASE to prevent ice build-up on the blades*

**WARNING**

*In event of ice build-up in correspondence of wing leading edges, stall speed increases.*

**WARNING**

*Ice build-up on wing, tail fin or flight control surfaces unexpected sudden roll and/or pitch tendencies can be experienced and may lead to unusual attitude and loss of aircraft control.*

**WARNING**

*Do not use Autopilot when icing formation is suspected or detected.*

## 5.5 CARBURETTOR ICING

**DURING TAKEOFF**

The carburettor icing in "full throttle" mode is unlikely.

Take off in known or suspected icing formation is forbidden; in order to dispose of full engine take off power, take-off must be performed with carburettor heating OFF.

**IN FLIGHT**

Carburettor icing is considered probable when external air temperature is below 15° C and visible air moisture (clouds, mist, haze or fog) or atmospheric precipitation are present.

Generally, an OAT-to-dew point temperature spread lower than 10°C and OAT less than 15°C with visibility lower than 5 km is a positive indication of likely icing formation condition.

Should an inadvertent flight into known or forecast icing condition happen carburettor heating should be selected "ON" as soon as possible: the greater the advance carburettors are warmed the better the chances not to form ice and avoid engine power loss or reduction.

Keep Carb Heating "ON" until engine power is restored and area of possible icing condition is exited.

**CAUTION**

*Carburettor Heating selected to "ON" will cause engine RPM reduction of about 100 RPM causing a sensible available engine power decrease.*

## 5.6 FLAPS CONTROL FAILURE

### DURING TAKEOFF

CAUTION

*Flap UP take off, requires a T/O distance (50 ft height obstacle distance) increased by about 20%.*

1. Airspeed — *Keep below 93 KIAS*
2. **Land as soon as practical**

### DURING APPROACH/LANDING

CAUTION

*If the flaps control fails, consider the higher stall speed (see Section 5, Para. 6, "Stall Speed") and an increased landing distance of about 25%.*

1. Airspeed — *Keep over 75 KIAS*
2. **Land as soon as practical** on a runway of appropriate length

# 6 ONE ENGINE INOPERATIVE PROCEDURES

*The ineffectiveness of one engine results in asymmetric traction which tends to yaw and bank the aircraft towards the inoperative engine. In this condition it is essential to maintain the direction of flight compensating the lower traction and counteracting the yawing effects by mean of rudder pedals. To improve directional control, it is advisable to bank the aircraft of about 5° to the side of the operating engine.*

**CAUTION**

*In addition, reduced available overall power and extended control surfaces will lead to a performances drop: a quick pitch attitude reduction will allow to keep a minimum safety airspeed.*

*The higher is the airspeed the better will be lateral and directional control efficiency: never allow airspeed to drop below $V_{MCA}$.*

*Best residual climb performances in OEI (One Engine Inoperative) condition have been recorded in Flap Up configuration and at $V_{YSE}$, which is marked as a Blue Line on the Airspeed indicator (calculated for maximum Take Off Weight and Sea, Level ISA condition) For actual condition $V_{YSE}$ refer to Section 5 Para. 13, "One engine rate of climb".*

**CAUTION**

*$V_{XSE}$ is actually very close to $V_{YSE}$ in any condition, thus best climb performance will also be associated with best climb angle (gradient) performance. Refer to Section 5 Para. 14, One-Engine Rate of Climb at $V_{xSE}$ , for relevant data.*

### 6.1 CHARACTERISTIC AIRSPEEDS WITH ONE ENGINE INOPERATIVE

In case of one engine inoperative condition (OEI), pilot shall take into account the airspeeds shown below:

| Conditions | Speed (KIAS) | |
|---|---|---|
| Minimum aircraft control speed with one engine inoperative and flaps set to T.O. ($V_{MC}$) | 62 | |
| Best rate-of-climb speed OEI ($V_{YSE}$) | MTOW 1180 kg | MTOW 1230 kg |
| | 80 | 84 |
| Best gradient speed OEI ($V_{XSE}$) | 79 | 83 |

## 6.2 INFLIGHT ENGINE RESTART

**WARNING**

*After:*

- *mechanical engine seizure;*
- *fire;*
- *major propeller damage*

*engine restart is not recommended.*

| | | |
|---|---|---|
| 1. | Carburettor heat | *ON if required* |
| 2. | Electrical fuel pump | *ON* |
| 3. | Fuel quantity indicator | *CHECK* |
| 4. | Fuel Selector | *CHECK (Crossfeed if required)* |
| 5. | FIELD | *OFF* |
| 6. | Ignition | *BOTH ON* |
| 7. | Operating engine Throttle Lever | *SET as practical* |
| 8. | Stopped engine Throttle Lever | *IDLE* |
| 9. | Stopped engine Propeller Lever | *FULL FORWARD* |
| 10. | Start push-button | *PUSH* |
| 11. | Propeller Lever | *SET at desired rpm* |
| 12. | FIELD | *ON (check for positive ammeter)* |
| 13. | Engine throttle levers | *SET as required* |

**If engine restart is unsuccessful**

| | | |
|---|---|---|
| 14. | EMERG BATT switch | ON (if starting battery installed) |

15. Repeat engine restart procedure

**CAUTION**

*After engine restart, if practical, moderate propeller rpm and throttle increase to allow OIL and CHT/CT temperatures for stabilizing in the green arcs.*

NOTE

*If the fuel quantity in the tank which feeds the stopped engine is low, select the opposite side fuel tank by means of the fuel selector.*

**If engine restart is still unsuccessful:**

| | | |
|---|---|---|
| 16. | Affected engine | *SECURE (see engine securing procedure Para. 3)* |

17. **Land as soon as possible** applying *one engine inoperative landing* procedure. See Para. 6.6

## 6.3 ENGINE FAILURE DURING TAKEOFF RUN

**BEFORE ROTATION: ABORT TAKE OFF**

| | | |
|---|---|---|
| 1. | **Throttle Lever** | ***BOTH IDLE*** |
| 2. | **Rudder** | ***Keep heading control*** |
| 3. | **Brakes** | ***As required*** |

**When safely stopped:**

| | | |
|---|---|---|
| 4. | Failed Engine Ignition | BOTH OFF |
| 5. | Failed Engine Field | *OFF* |
| 6. | Failed Engine Electrical fuel pump | *OFF* |

**IF THE DECISION IS TAKEN TO CONTINUE THE TAKEOFF:**

**WARNING**

*A take-off abort should always be preferred if a safe stop can be performed on ground.*

*A suggested "GO-NO-GO" criteria is: abort take-off until LG is still down and locked.*

*Once airborne accelerate to Blue Line Speed ($V_{YSE}$) before commanding LG retraction.*

*Take-off planning should take into account that high density altitude and aircraft mass may result in OEI negative climb rate.*

*$V_{YSE}$ with flap up shall be flown in order to achieve best possible rate of climb after landing gear retraction and engine feathering.*

| | | |
|---|---|---|
| 1. | **Operating engine Throttle Lever** | ***FULL POWER*** |
| 2. | **Operating engine Propeller Lever** | ***FULL FORWARD*** |
| 3. | **Heading** | ***Keep control using rudder and ailerons*** |
| 4. | **Attitude** | ***Reduce as appropriate to keep airspeed over 62 KIAS*** |
| 5. | **Inoperative engine Propeller Lever** | ***FEATHER*** |
| 6. | **Landing gear control lever** | ***UP*** |
| 7. | **Airspeed** | ***$V_{XSE}/V_{YSE}$ as required*** |
| 8. | **Flaps** | ***0°*** |

**At safe altitude**

| | | |
|---|---|---|
| 9. | Inoperative engine | *Confirm and SECURE* |
| 10. | Operative engine Electrical fuel pump | *Check ON* |
| 11. | Operating engine | *Check engine instruments* |
| 12. | Operating engine Fuel Selector | *Check correct feeding (crossfeed if needed)* |

**If engine restart is recommended:**

13. Apply INFLIGHT ENGINE RESTART procedure *see Para 6.2*

**If engine restart is unsuccessful or it is not recommended:**

13. **Land as soon as possible**
14. One engine inoperative landing procedure. *see Para. 6.6*

WARNING

*Following:*

- *mechanical engine seizure;*
- *fire;*
- *major propeller damage*

*engine restart is not recommended.*

## 6.4 ENGINE FAILURE DURING CLIMB

| | | |
|---|---|---|
| 1. | **Autopilot** | **OFF** |
| 2. | **Heading** | ***Keep control using rudder and ailerons*** |
| 3. | **Attitude** | ***Reduce as appropriate to keep airspeed over 62 KIAS*** |
| 4. | Operating engine Throttle Lever | *FULL THROTTLE* |
| 5. | Operating engine Propeller Lever | *FULL FORWARD* |
| 6. | Operative engine Electrical fuel pump | *Check ON* |
| 7. | Inoperative engine Propeller Lever | *FEATHER* |
| 8. | Inoperative engine | Confirm and *SECURE* |

**If engine restart is possible:**

9. Apply INFLIGHT ENGINE RESTART procedure *see Para 6.2*

**If engine restart is unsuccessful or it is not recommended:**

9. **Land as soon as possible**
10. One engine inoperative landing procedure. *see Para. 6.6*

**WARNING**

*Following a mechanical engine seizure, fire or a major propeller damage engine restart is not recommended.*

**WARNING**

*Continuation of flight to a safe landing runway must be planned taking into account maximum operating ceiling in OEI condition. Refer to Section 5 Para 1, "One-engine rate of climb".*

## 6.5 ENGINE FAILURE IN FLIGHT

| | | |
|---|---|---|
| 1. | **Autopilot** | ***OFF*** |
| 2. | **Heading** | ***Keep control using rudder and ailerons*** |
| 3. | **Attitude** | ***Adjust as appropriate to keep airspeed over 62 KIAS*** |

| | | |
|---|---|---|
| 4. | Operating engine | *Monitor engine instruments* |
| 5. | Operative engine Electrical fuel pump | *Check ON* |
| 6. | Operating engine Fuel Selector | *Check correct feeding (crossfeed if needed)* |

**If engine restart is possible:**

7. Apply INFLIGHT ENGINE RESTART procedure *see Para 6.2*

**If engine restart is unsuccessful or it is not recommended:**

8. Land as soon as possible
9. One engine inoperative landing procedure. *see Para. 6.6*

WARNING

*Following a mechanical engine seizure, fire or a major propeller damage engine restart is not recommended.*

WARNING

*Continuation of flight to a safe landing runway must be planned taking into account maximum operating ceiling in OEI condition. Refer to Section 5 Para 12. Rate of climb with One Engine Inoperative.*

## 6.6 ONE ENGINE INOPERATIVE LANDING


*Thoroughly evaluate residual Single Engine Go-Around capabilities and expected climb gradient should a Missed Approach / balked landing be executed.*

*Refer to Section 5, Para. Single engine go around/Balked landing/climb and Para. 13 and 14- One-engine Rate of Climb at $V_{YSE}$ and $V_{XSE}$*


*Autopilot must be kept OFF*

| | | |
|---|---|---|
| 1. | Seat belts | *Tightly fastened* |
| 2. | Landing lights | *As required* |
| 3. | Operating engine Fuel Selector | *Check correct feeding/crossfeed if needed* |
| 4. | Inoperative engine Propeller Lever | *CHECK FEATHER* |
| 5. | Inoperative engine | *CHECK SECURED* |
| 6. | Operative engine Electrical fuel pump | *ON* |

**When on final leg:**

| | | |
|---|---|---|
| 7. | Flap | *T/O* |
| 8. | Landing gear | *Select DOWN and check three green lights on* |
| 9. | Approach Airspeed | *$V_{YSE}$* |
| 10. | Touchdown speed | *70 KIAS* |

# 7 LANDING GEAR SYSTEM FAILURES

## 7.1 EMERGENCY LANDING GEAR EXTENSION

NOTE

*Landing gear extension failure is identified by means of the green lights not illuminated: relevant gear leg may not be fully extended and/or locked.*

*Light bulb operating status can be verified by pressing the LDG push-to-test button. Additionally, the red light TRANS indicates that one or more legs are moving and the PUMP ON amber light on the annunciator panel indicates the hydraulic gear pump is operating.*

| | | |
|---|---|---|
| 1. | Airspeed | *below* applicable VLO/VLE |
| 2. | Landing gear control lever | *DOWN* |
| 3. | Emergency gear extension access door | *REMOVE* |
| 4. | RH control lever | *ROTATE 90° counterclockwise* |
| 5. | Wait at least 20 seconds | |

NOTE

*Main Landing Gear legs green lights may be turned on, thus indicating effective main gear legs blocked in down position by mere effect of gravity force.*

| | | |
|---|---|---|
| 6. | LH control lever | *ROTATE 180° counterclockwise* |
| 7. | **Land as soon as practical** | |


NOTE

*The emergency landing gear extension operation takes about 20- sec.*

## 7.2 COMPLETE GEAR UP OR NOSE GEAR UP LANDING


CAUTION

*The following procedure applies if Nose Landing Gear is not extended and locked even after emergency extension procedure.*


WARNING

*A Nose Landing Gear up leg not down and locked might lead to a hazardous situation, especially on uneven runways.*


WARNING

*If landing gear position is not known, perform a tower fly-by at safe speed and altitude to have confirmation about its situation.*

*If possible coordinate fire brigade intervention along runway and report number of persons on board and remaining fuel type and quantity.*

**If a complete Landing Gear up or a Nose Landing Gear up position is reported**:

**Preparation**

| | | |
|---|---|---|
| 1. | Reduce fuel load if time and conditions permit | |
| 2. | Crew and passengers safety belts | *Tightly fastened* |
| 3. | Landing gear control lever | *UP* |
| 4. | Green lights and TRANS light | *CHECK OFF* |
| 5. | Flap setting | *plan approach with Flap Land* |

**Before ground contact:**

| | | |
|---|---|---|
| 6. | LH and RH Fuel Selector | *BOTH OFF* |
| 7. | LH and RH Electrical fuel pump | *BOTH OFF* |
| 8. | Ignitions | *ALL OFF* |

**On touch down:**

| | | |
|---|---|---|
| 9. | Landing attitude | *slight nose-up and wings levelled,* |
| 10. | Touchdown speed | *as low as 50 KIAS with flap* |
| 11. | Aircraft nose | *gently lower as speed bleeds off* |

**After aircraft stops:**

| | | |
|---|---|---|
| 12. | FIELD LH and RH | *BOTH OFF* |
| 13. | MASTER SWITCH | *OFF* |


CAUTION

*Master switch to OFF impairs radio communication and outside aircraft lighting.*

14. Aircraft Evacuation *carry out if necessary*

**WARNING**

*Consider use of ditching emergency exit to escape in case pilot or passenger doors are blocked, watch for engine hot parts, fuel, hydraulic fluid or oil spills. Leave aircraft in upwind direction.*

## 7.3 PARTIAL MAIN LG EXTENSION

CAUTION

*The following procedure applies if one or both Main Landing Gear legs are not completely extended and locked even after emergency extension procedure.*

WARNING

*A partial gear landing (RH and/or LH leg not down and locked) might turn into a hazardous situation, especially on uneven runways.*

*If possible try to obtain a symmetric gear extension (e.g. by trying further landing gear retraction) in order to avoid swerving after touchdown. A gear up landing is generally considered safer.*

WARNING

*If landing gear position is not known, perform a tower fly-by at safe speed and altitude to have confirmation about its situation.*

*If possible coordinate fire brigade intervention along runway and report number of persons on board and remaining fuel type and quantity.*

**Preparation**

| | | |
|---|---|---|
| 1. | Reduce fuel load if time and conditions permit | |
| 2. | Crew and passengers safety belts | *Tightly fastened* |
| 3. | Landing gear control lever | *UP* |
| 4. | Green lights and TRANS light | *CHECK OFF* |
| 5. | Flap setting | *plan approach with Flap Land* |

**If partially extended landing gear is confirmed:**

**Before ground contact:**

| | | |
|---|---|---|
| 6. | LH and RH Fuel Selector | *BOTH OFF* |
| 7. | LH and RH Electrical fuel pump | *BOTH OFF* |
| 8. | Ignitions | *ALL OFF* |

**On touch down:**

| | | |
|---|---|---|
| 9. | Align for approach | *on the runway centreline* |
| 10. | Touchdown speed | *as low as 50 KIAS* |
| 11. | Touchdown | *on the extended gear only* |
| 12. | Heading and direction | *maintain applying appropriate aileron and rudder/steering control* |
| 13. | Retracted leg | *keep off the ground as long as possible* |

**After aircraft stops:**

14. FIELD LH and RH — *BOTH OFF*
15. MASTER SWITCH — *OFF*

**CAUTION**

*Master switch to OFF impairs radio communication and outside aircraft lighting.*

16. Aircraft Evacuation — *carry out if necessary*

**WARNING**

*Consider use of ditching emergency exit to escape in case pilot or passenger doors are blocked, watch for engine hot parts, fuel, hydraulic fluid or oil spills. Leave aircraft in upwind direction.*

## 7.4 FAILED RETRACTION

1. Airspeed — *Keep below applicable VLO/VLE*
2. Landing gear control lever — *DOWN*

**WARNING**

*A Landing Gear lever recycle (further retraction attempt) may result in a final partial Landing Gear Extension, which may then compromise safe landing aircraft capability.*

3. Landing Gear lights — *Check*

***If a safe landing configuration is obtained (3 greens)***

4. Land normally

***If a safe landing gear configuration is not obtained:***

4. Emergency LG extension procedure — *Apply (See Para. 7.1)*
5. Land as soon as practical

## 7.5 UNINTENTIONAL LANDING GEAR EXTENSION

**CAUTION**

*An unwanted landing gear extension, with at least one leg moving downward, may be caused by hydraulic fluid loss and it is signaled by*

- *significant aerodynamic noise increase;*
- *light and counteractable nose down pitch moment;*
- *red TRANS light turned on.*

1. Airspeed — *Keep below applicable VLO/VLE*
2. Landing gear control lever — *DOWN*
3. Landing Gear lights — *Check*

***If a safe landing configuration is obtained (3 greens)***

4. Land normally

***If a safe landing gear configuration is not obtained:***

4. Emergency LG extension procedure — *Apply (See Para. 7.1)*
5. **Land as soon as practical**

INTENTIONALLY LEFT BLANK

# 8 SMOKE AND FIRE OCCURRENCE

## 8.1 ENGINE FIRE ON THE GROUND

| | | |
|---|---|---|
| 1. | **Fuel Selectors** | ***BOTH OFF*** |
| 2. | **Ignitions** | ***ALL OFF*** |
| 3. | **Electrical fuel pumps** | ***BOTH OFF*** |
| 4. | **Cabin heat and defrost** | ***OFF*** |
| 5. | **MASTER SWITCH** | ***OFF*** |
| 6. | **Parking Brake** | ***ENGAGED*** |
| 7. | **Aircraft Evacuation** | **carry out immediately** |

**WARNING**

*Consider use of ditching emergency exit to escape in case pilot or passenger doors are blocked, watch for engine hot parts, fuel, hydraulic fluid or oil spills. Leave aircraft in upwind direction.*

## 8.2 ENGINE FIRE DURING TAKEOFF RUN

**BEFORE ROTATION: ABORT TAKE OFF**

| | | |
|---|---|---|
| 1. | **Throttle Lever** | **BOTH IDLE** |
| 2. | **Rudder** | ***Keep heading control*** |
| 3. | **Brakes** | ***As required*** |

**With aircraft under control**

| | | |
|---|---|---|
| 4. | **Fuel Selector** | ***BOTH OFF*** |
| 5. | **Ignitions** | ***ALL OFF*** |
| 6. | **Electrical fuel pump** | ***BOTH OFF*** |
| 7. | **Cabin heat and defrost** | ***OFF*** |
| 8. | **MASTER SWITCH** | ***OFF*** |
| 9. | **Parking Brake** | ***ENGAGED*** |
| 10. | **Aircraft Evacuation** | ***carry out immediately*** |

WARNING

*Consider use of ditching emergency exit to escape in case pilot or passenger doors are blocked, watch for engine hot parts, fuel, hydraulic fluid or oil spills. Leave aircraft in upwind direction.*

**IF THE DECISION IS TAKEN TO CONTINUE THE TAKEOFF:**

WARNING

*A take-off abort should always be preferred if a safe stop can be performed on ground.*

*A suggested "GO-NO-GO" criteria is: abort take-off until LG is still down and locked.*

*Once airborne accelerate to Blue Line Speed ($V_{YSE}$) before commanding LG retraction.*

*Take-off planning should take into account that high density altitude and aircraft mass may result in OEI negative climb rate.*

*$V_{YSE}$ with flap up shall be flown in order to achieve best possible rate of climb after landing gear retraction and engine feathering.*

| | | |
|---|---|---|
| 1. | **Operating engine Throttle Lever** | ***FULL POWER*** |
| 2. | **Operating engine Propeller Lever** | ***FULL FORWARD*** |
| 3. | **Heading** | ***Keep control using rudder and ailerons*** |
| 4. | **Attitude** | ***Reduce as appropriate to keep airspeed over 62 KIAS*** |
| 5. | **Fire affected engine Propeller Lever** | ***FEATHER*** |
| 6. | **Landing gear control lever** | ***UP*** |
| 7. | **Airspeed** | ***$V_{XSE}/V_{YSE}$ as required*** |
| 8. | **Flaps** | ***0°*** |

**At safe altitude**

| | | |
|---|---|---|
| 9. | Cabin heat and defrost | *BOTH OFF* |
| 10. | Fire affected engine Fuel Selector | *Confirm and OFF* |
| 11. | Fire affected engine Ignitions | *Confirm and BOTH OFF* |
| 12. | Fire affected engine Electrical fuel pump | *Confirm and OFF* |
| 13. | Fire affected engine FIELD | *OFF* |
| 14. | **Land as soon as possible** applying *one engine inoperative landing* procedure. See Para. 6.6 | |

## 8.3 ENGINE FIRE IN FLIGHT

| | | |
|---|---|---|
| 1. | **Cabin heat and defrost** | ***BOTH OFF*** |
| 2. | **Autopilot** | ***OFF*** |
| 3. | **Fire affected engine Fuel Selector** | ***Confirm and OFF*** |
| 4. | **Fire affected engine Ignition** | ***Confirm and BOTH OFF*** |
| 5. | **Fire affected engine Throttle Lever** | ***Confirm and FULL FORWARD*** |
| 6. | **Fire affected engine Propeller Lever** | ***Confirm and FEATHER*** |
| 7. | **Fire affected engine Electrical fuel pump** | ***OFF*** |
| 8. | **Heading** | ***Keep control using rudder and ailerons*** |
| 9. | **Attitude** | ***Adjust as appropriate to keep airspeed over 62 KIAS*** |
| 10. | **Fire affected engine Field** | ***OFF*** |
| 11. | **Cabin ventilation** | ***OPEN*** |

12. **Land as soon as possible** applying *one engine inoperative landing* procedure. See Para. 6.6

## 8.4 ELECTRICAL SMOKE IN CABIN ON THE GROUND

| | | |
|---|---|---|
| 1. | **MASTER SWITCH** | ***OFF*** |
| 2. | **Cabin heat and defrost** | ***OFF*** |
| 3. | **Throttle Lever** | ***BOTH IDLE*** |
| 4. | **Ignitions** | ***ALL OFF*** |
| 5. | **Fuel Selector** | ***BOTH OFF*** |
| 6. | **Parking Brake** | ***ENGAGED*** |
| 7. | **Aircraft Evacuation** | **carry out immediately** |

**WARNING**

*Consider use of ditching emergency exit to escape in case pilot or passenger doors are blocked, watch for engine hot parts, fuel, hydraulic fluid or oil spills. Leave aircraft in upwind direction.*

## 8.5 ELECTRICAL SMOKE IN CABIN DURING FLIGHT

| | | |
|---|---|---|
| 1. | **Cabin ventilation** | ***OPEN*** |
| 2. | **Emergency light** | ***ON*** |
| 3. | **Standby attitude indicator switch** | ***ON*** |
| 4. | **Gain VMC conditions as soon as possible** | |

**In case of cockpit fire:**

| | | |
|---|---|---|
| 5. | **Fire extinguisher** | ***use toward base of flames*** |

CAUTION

*A tripped circuit breaker should not be reset.*

**If smoke persists, shed electrical supply in order to isolate faulty source by:**

| | | |
|---|---|---|
| 6. | FIELD LH and RH | *OFF* |
| 7. | AVIONICS LH and RH | *OFF* |
| 8. | CROSS BUS LH and RH | *BOTH OFF* |

CAUTION

*A fully charged battery can supply electrical power for at least 30 minutes.*

**If faulty source is found:**

9. It may be possible to restore non faulty power sources (one at a time)

**If smoke persists:**

WARNING

*Before total electrical system shutdown consider gaining VMC condition, at night set personal emergency light on.*

*Only emergency light and emergency ADI will be electrically powered.*

*All radio COM and NAV, Landing Gear lever (normal mode) and indication lights, electrical trims and flaps will be unserviceable.*

| | | |
|---|---|---|
| 10. | MASTER SWITCH | *OFF* |

11. **Land as soon as possible**

**When on ground:**

12. Aircraft Evacuation *carry out as necessary*

**WARNING**

*Consider use of ditching emergency exit to escape in case pilot or passenger doors are blocked, watch for engine hot parts, fuel, hydraulic fluid or oil spills. Leave aircraft in upwind direction.*

## 9 UNINTENTIONAL SPIN RECOVERY

*Spin behaviour has not been demonstrated since certification process does not required it for this aircraft category.*

*Intentional spin is forbidden.*

*Stall with one engine inoperative is forbidden.*

**WARNING**

*Should an unintentional spin occur, the classic recovery manoeuvre is deemed as being the best action to undertake:*

1. **Both engines throttles** ***idle***
2. **Flight Controls** ***centralize***
3. **Rudder** ***fully against rotation until it stops***

# 10 LANDING EMERGENCIES

## 10.1 LANDING WITHOUT ENGINE POWER

*In case of double engine failure both propellers should be feathered to achieve maximum efficiency. Best glide speed is attained with flap UP and equals $V_Y$ for current aircraft mass and air density altitude. Refer to Section 5, Para. "Enroute Rate of Climb".*

**CAUTION**

*Normal landing gear extension requires MASTER switch ON, an efficient battery and takes around 20 seconds.*
*LG selection should be appropriately anticipated when sure on final.*
*Flap can be set to T/O or LAND when sure on final to reduce landing ground roll on short field.*

*Touchdown speed can be as low as 50 kt with flap down.*

1. Airspeed

| MTOW 1180kg | MTOW 1230 kg |
|---|---|
| $V_Y$ = 83 KIAS | $V_Y$ = 84 KIAS |

2. Flaps — *UP*
3. Emergency landing field — *Select*

**WARNING**

*Emergency landing strip should be chosen considering surface condition, length and obstacles. Wind can be guessed by smoke plumes direction and tree tops or grass bending. Select touchdown direction according to the furrows of a plowed field, not across.*

4. Safety belts — *FASTEN and tighten*
5. Flaps — *Set when landing is assured*
6. Landing gear control lever — *DOWN when landing is assured*

**CAUTION**

*To reduce landing gear extension time, evaluate use of emergency control system which requires about 12 sec.*

***Before touch down***

| | | |
|---|---|---|
| 7. | Fuel Selector | *BOTH OFF* |
| 8. | Electrical fuel pump | *BOTH OFF* |
| 9. | Ignitions | *ALL OFF* |
| 10. | MASTER SWITCH | *OFF* |

***When stopped***

| | | |
|---|---|---|
| 11. | Aircraft Evacuation | *carry out if necessary* |

**WARNING**

*Consider use of ditching emergency exit to escape in case pilot or passenger doors are blocked, watch for engine hot parts, fuel, hydraulic fluid or oil spills. Leave aircraft in upwind direction.*

## 10.2 LANDING WITH NOSE LANDING GEAR TIRE DEFLATED

WARNING

*If possible, as a nose landing gear flat tire condition is known, coordinate fire brigade intervention along runway and report number of persons on board and remaining fuel type and quantity.*

**If Nose Landing Gear flat tire is confirmed**:

**Preparation**

| | | |
|---|---|---|
| 1. | Crew and passengers safety belts | *Tightly fastened* |
| 2. | If time permits | *Burn fuel to lower landing weight* |
| 3. | Flap setting | *plan approach with Flap Land* |

**Before ground contact:**

| | | |
|---|---|---|
| 4. | Fuel Selector | *BOTH OFF* |
| 5. | Electrical fuel pump | *BOTH OFF* |
| 6. | Ignitions | *ALL OFF* |

**On touch down:**

| | | |
|---|---|---|
| 7. | Landing attitude | *slight nose-up and wings levelled,* |
| 8. | Touchdown speed | *as low as 50 KIAS with flap* |
| 9. | Aircraft nose | *gently lower as speed bleeds off* |

**After aircraft stops:**

| | | |
|---|---|---|
| 10. | FIELD LH and RH | *BOTH OFF* |
| 11. | MASTER SWITCH | *OFF* |

CAUTION

*Master switch to OFF impairs radio communication and outside aircraft lighting.*

| | | |
|---|---|---|
| 12. | Aircraft Evacuation | *carry out if necessary* |

WARNING

*Consider use of ditching emergency exit to escape in case pilot or passenger doors are blocked, watch for engine hot parts, fuel, hydraulic fluid or oil spills. Leave aircraft in upwind direction.*

## 10.3 LANDING WITH A KNOWN MAIN LANDING GEAR TIRE DEFLATED


*An asymmetrical landing gear tire condition (RH and/or LH tires deflated) might turn into a hazardous situation, especially on uneven runways.*


*If possible, as a landing gear tires condition is known, coordinate fire brigade intervention along runway and report number of persons on board and remaining fuel type and quantity.*

**If a main Landing Gear flat tire is confirmed**:

**Preparation**

| | | |
|---|---|---|
| 1. | Crew and passengers safety belts | *Tightly fastened* |
| 2. | Flap setting | *plan approach with Flap Land* |

**Before ground contact:**

| | | |
|---|---|---|
| 3. | Ignitions | ALL OFF |
| 4. | LH and RH Fuel Selector | BOTH OFF |
| 5. | LH and RH Electrical fuel pump | BOTH OFF |

**On touch down:**

| | | |
|---|---|---|
| 6. | Align for approach | *on the runway centreline* |
| 7. | Touchdown speed | *as low as 50 KIAS* |
| 8. | Touchdown | *on the good tire gear only* |
| 9. | Heading and direction | *maintain applying appropriate aileron and rudder/steering control* |
| 10. | Flattened tire | *keep off the ground as long as possible* |

**After aircraft stops (or if runway departure is imminent):**

| | | |
|---|---|---|
| 11. | FIELD LH and RH | *BOTH OFF* |
| 12. | MASTER SWITCH | *OFF* |


*Master switch to OFF impairs radio communication and outside aircraft lighting.*

| | | |
|---|---|---|
| 13. | Aircraft Evacuation | *carry out if necessary* |


*Consider use of ditching emergency exit to escape in case pilot or passenger doors are blocked, watch for engine hot parts, fuel, hydraulic fluid or oil spills. Leave aircraft in upwind direction.*

## 10.4 LANDING WITHOUT BRAKES


CAUTION

*If possible, select an airport with suitable runway length.*

*Otherwise, evaluate the possibility to perform a gear up landing (refer to procedure reported on Para. 7.2). In the latter case consider the increasing hazard of an uneven pavement.*

1. Safety belts — *FASTEN*

**After touch down if runway is deemed insufficient to decelerate:**

2. Fuel Selector — *BOTH OFF*
3. Electrical fuel pumps — *BOTH OFF*
4. Ignitions — *ALL OFF*
5. FIELD LH and RH — *BOTH OFF*
6. MASTER SWITCH — *OFF*


CAUTION

*Master switch to OFF impairs radio communication and outside aircraft lighting.*

**Before end of runway or if runway departure is imminent:**

1. Landing gear control lever — *UP*

**After aircraft stops:**

2. Aircraft Evacuation — *carry out if necessary*


WARNING

*Consider use of ditching emergency exit to escape in case pilot or passenger doors are blocked, watch for engine hot parts, fuel, hydraulic fluid or oil spills. Leave aircraft in upwind direction.*

# 11 AIRCRAFT EVACUATION

**WARNING**

*Leave the aircraft when engines are fully stopped. Watch for engine hot parts and fuel, hydraulic fluid or oil spills when using fuselage doors. If fuselage doors are unserviceable escape through the ditching emergency exit*

*In case of engine fire escape from opposite or upwind aircraft side.*

**Verify (if not yet performed):**

| | | |
|---|---|---|
| 1. | **Fuel Selectors** | ***BOTH OFF*** |
| 2. | **Ignitions** | ***ALL OFF*** |
| 3. | **Electrical fuel pumps** | ***BOTH OFF*** |
| 4. | **MASTER SWITCH** | ***OFF*** |
| 5. | **Parking Brake** | ***ENGAGED*** |
| 6. | **Leave the aircraft using emergency exits** | |

# 12 DITCHING

**WARNING**

*Contact with water shall happen with aircraft longitudinal axis and direction of motion parallel to the wave at the minimum possible speed. Keep the nose up as long as possible.*

*Once in the water, the aircraft shall be evacuated through the ditching emergency exit, if available put life vest on and set dinghy out first. Inflate them only outside the aircraft.*

*If available, try to approach any existing ship in the vicinity in order to be rapidly located and rescued right after ditching.*

| | | |
|---|---|---|
| 1. | Landing gear | *UP* |
| 2. | Safety belts | *Tighten and fastened* |
| 3. | Flaps | *FULL* |

**Before water impact**

| | | |
|---|---|---|
| 4. | Fuel Selector | *BOTH OFF* |
| 5. | Electrical fuel pump | *BOTH OFF* |
| 6. | Ignitions | *ALL OFF* |
| 7. | MASTER SWITCH | *OFF* |
| 8. | FIELD LH and RH | *BOTH OFF* |
| 9. | Impact speed | *50 KIAS* |

**Aircraft evacuation**

| | | |
|---|---|---|
| 10. | Emergency exit handle | *rotate clockwise* |
| 11. | Latch door | *push outward* |
| 12. | Life vests | *don* |
| 13. | Evacuate the aircraft | |

**Supplement G19: pages replacement instructions**

# SECTION 4 - NORMAL PROCEDURES

**Supplement G19 Section 4 – NORMAL PROCEDURES**
**replaces Basic AFM Section 4 as a whole**

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# SECTION 4 – NORMAL PROCEDURES

## INDEX

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# 1. INTRODUCTION

Section 4 describes checklists and recommended procedures for the conduct of normal operations for ***P2006T*** aircraft.

## 1.1. NORMAL OPS GENERAL RECOMMENDATIONS

The following points should be always brought to attention to pilot/instructor/operator when operating a Tecnam aircraft equipped with variable pitch propeller:

***1. Propeller governor ground check***.
As prescribed by the propeller/governor manufacturer, a drop of 400/500 propeller RPM should be produced during this check. Its aim is to confirm the governor efficiency, not its complete feathering function.
Especially during the first cycle of propeller lever pulling, the governor tendency is to respond to the input with consistent delay, causing the pilot to continue moving back the propeller lever until an abrupt RPM change is observed. This causes an excessive drop in propeller speed that may reach up to 800 RPM in some cases and, consequently, a drop of up to 2000 engine shaft RPM. The long term result is a major wear of engine gearbox, bushings and pistons. In some cases, it may also result in detonation.
In order to avoid these long term adverse effects, the governor ground check should be performed by slowly and gently pulling the propeller lever. The purging cycle should be repeated 3 times, making sure that the governor closely and firmly controls the rpm.

The following recommendations have to be followed during the test:

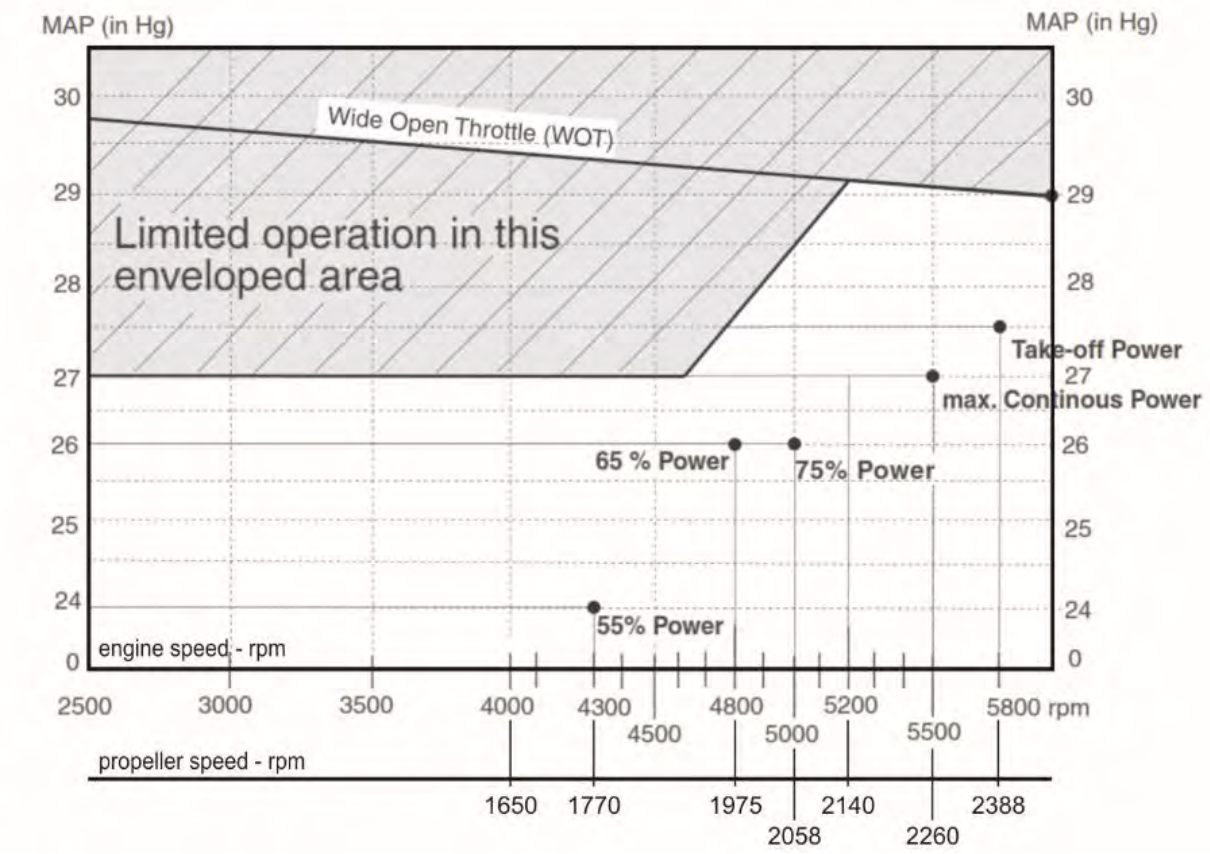
***- propeller speed drops shall be of 400/500 propeller RPM***
***- the cycle shall be repeated 3 times***
***- the pilot shall be ready to push the propeller lever if a drop of >500 RPM is recorded***

***2. Power changes.***
When power setting changes are required in any flight condition, remember the following correct procedure:

**Power increase = FIRST Prop THEN Map**

**Power reduction = FIRST Map THEN Prop**

Useful guideline chart that could be used for best propeller/manifold combination is following reported:




***3. Suitable Fuels.***

Tecnam remember operators to fill the aircraft with approved and suitable fuels. Use of not approved/unknown fuels may cause damages to the engine.

**ONLY USE APPROVED FUELS**

**For details refer to Section 2 of this manual (or applicable Supplement) and latest issue of Rotax SI-912-016**

## G1000 NXi system use

For safety reasons, G1000 NXi operational procedures must be learned on the ground.

Document Garmin G1000 NXi Pilot's Guide for Tecnam P2006T (P/N 190-02286-00) – last issue, reports detailed instructions to operate the system in subject. Make always reference to the above mentioned document.

**CAUTION**

*Garmin G1000 NXi Pilot's Guide for Tecnam P2006T (P/N 190-02286-00) – last issue - must be carried onboard the airplane at all times.*

**WARNING**

*To reduce the risk of unsafe operation, carefully review and understand all aspects of the G1000 NXi Pilot's Guide (P/N 190-02286-00) documentation at the last issue and the AFM for the aircraft. Thoroughly practice basic operation prior to actual use. During flight operations, carefully compare indications from the G1000 NXi to all available navigation sources, including the information from other NAVAIDs, visual sightings, charts, etc. For safety purposes, always resolve any discrepancies before continuing navigation.*

**WARNING**

*Do not use basemap (land and water data) information for primary navigation. Basemap data is intended only to supplement other approved navigation data sources and should be considered as an aid to enhance situational awareness. Do not use outdated database information. Databases used in the G1000 NXi system must be updated regularly in order to ensure that the information remains current. Pilots using any outdated database do so entirely at their own risk. Reference "Garmin G1000 NXi Pilot's Guide for the Tecnam P2006T (P/N 190-02286-00)", last issue, Appendix B concerning SD card use and databases.*

**WARNING**

*For safety reasons, G1000 NXi operational procedures must be learned on the ground.*

**WARNING**

*Because of variation in the earth's magnetic field, operating the G1000 NXi within the following areas could result in loss of reliable attitude and heading indications.*

*North of 72° North latitude at all longitudes; South of 70° South latitude at all longitudes; North of 65° North latitude between longitude 75° W and 120° W. (Northern Canada); North of 70° North latitude between longitude 70° W and 128° W. (Northern Canada); North of 70° North latitude between longitude 85° E and 114° E. (Northern Russia); South of 55° South latitude between longitude 120° E and 165° E. (Region south of Australia and New Zealand).*

**WARNING**

*The altitude calculated by G1000 NXi GPS receivers is geometric height above Mean Sea Level and could vary significantly from the altitude displayed by pressure altimeters, such as the GDC 72 Air Data Computer, or other altimeters in aircraft. GPS altitude should never be used for vertical navigation. Always use pressure altitude displayed by the G1000 NXi PFD or other pressure altimeters in aircraft.*

NOTE

*If the pilot profile is changed during the flight, the HSI could not indicate the correct LOC or VOR indication until the pilot manually tunes the active frequency. Make sure that the displayed indication on the HSI indicator is consistent with the selected frequency.*

NOTE

*The data contained in the terrain and obstacle databases comes from government agencies. Garmin accurately processes and cross-validates the data, but cannot guarantee the accuracy and completeness of the data. Reference "Garmin G1000 NXi Pilot's Guide for the Tecnam P2006T" (P/N 190-02286-00), last issue, Appendix B concerning SD card use and databases.*

NOTE

*Use of polarized eyewear may cause the flight displays to appear dim or blank.*

## MD302 system use

**WARNING**

*"The detailed description, operation and functionalities of MD302 Stand By Attitude Module are provided on MD302 Stand-By Attitude Module Pilot's Guide" document P/N 9017846 rev.D, which is to be considered to be attached to this AFM and kept onboard the aircraft.*

# 2. AIRSPEEDS

## 2.1. NORMAL OPERATIONS

The following airspeeds are those which are significant for normal operations, with reference to both MTOW: 1180 kg and 1230 kg (if Supplement G10 - Increased MTOW @1230 KG - is applicable).

| | | **MTOW** | |
|---|---|---|---|
| | **FLAPS** | **1180kg** | **1230 kg** |
| Rotation Speed (in takeoff, $V_R$) | T/O | **64 KIAS** | **65 KIAS** |
| Best Angle-of-Climb Speed ($V_X$) | 0° | **73 KIAS** | **72 KIAS** |
| Best Rate-of-Climb speed ($V_Y$) | 0° | **80 KIAS** | **84 KIAS** |
| Approach speed | T/O | **90 KIAS** | **90 KIAS** |
| Final Approach Speed | FULL | **70 KIAS** | **71 KIAS** |
| Manoeuvring speed ($V_A$) | 0° | **118 KIAS** | **122 KIAS** |
| Never Exceed Speed ($V_{NE}$) | 0° | **167 KIAS** | **171 KIAS** |

## 2.2. SINGLE ENGINE TRAINING

$V_{SSE}$ is a speed selected as training aid for pilots in the handling of multi-engine aircraft. It is the minimum speed for intentionally rendering on engine inoperative in flight. This minimum speed provides the margin the manufacturer recommends for us when intentionally performing engine inoperative maneuvers during training. Shutting down an engine for training shall not become a habit; for safety purpose, and in order to optimise training, engine shutdown to perform OEI shall be executed only when necessary and required by regulations (e.g. during flight check, skill tests or demonstration as per 14CFR Part61 or similar).

**A simulated feather condition is obtained with propeller lever full forward and throttle lever set at 13.5 in Hg MAP at 70-90 KIAS and 2000-4000 ft (density altitude).**

| | |
|---|---|
| Recommended safe simulated OEI speed ($V_{SSE}$) | **70 KIAS** |

NOTE *Keep speed above $V_{SSE}$ for simulated OEI training operations.*

In normal operations, shutting down an engine for training shall not become a habit, in particular for safety reasons and in order to optimise training; engine shutdown to perform OEI shall be executed only when required by regulations (e.g. during flight check, skill tests or demonstration as per 14CFR Part61 or equivalent rule).

The continuous operation of engine securing for training may indeed cause long term damages to the engine itself due to the high load coming from propeller (which is in feathering angle during the engine re-starting).

# 3. NORMAL PROCEDURES CHECKLIST

## 3.1 RECOMMENDATIONS FOR COLD WEATHER OPERATIONS

**Engine cold weather operation**

Refer to Rotax 912 Series Operators Manual, last issue, providing instructions for operating media (lubricant and coolant specifications) to be used in cold weather operation.

**Parking**

When the airplane is parked in cold weather conditions and it is expected to be soaked at temperatures below freezing, some precautions need to be taken.

Clear snow, slush, and ice in the parking area, or at least clear the area around the tires to prevent them from freezing to the ground. Apply plugs on Pitot and static ports.

The exposed airframe parts should be protected, especially the engines, the wheels, the blades and the gears against the snow or ice accumulation. Water and other freezable liquids should be removed from the airplane.

Standing water that could freeze should be removed from critical parts, as flaps and ailerons hinges, trim tabs hinges, drain points, LG doors, cabin doors etc.

With an ambient temperature of below -20°C, remove battery and store in a warm dry place; additionally in order to prevent a heavy discharge and to increase the battery life time, it is recommended to use an external power source for engine starting at temperatures lower than –15°C.

When wheel brakes come in contact with ice, slush, or snow with freezing conditions, the brake disk may freeze: park the aircraft with parking brake control knob in OFF position and ensure the aircraft is properly chocked and moored.

In any case, when the probability of ice, snow, or heavy frost is forecast, the use of a hangar is strongly recommended.

An external inspection of the aircraft is performed before each flight, as prescribed on Section 3.1.

For cold weather operations, the crew must focus on the check of following parts of airplane (free of snow/ice/standing water).

- control surfaces
- fuselage
- wings
- vertical and horizontal stabilator
- stall warning switch
- engine inlets
- engines draining points
- propeller blades
- LG doors
- Pitot, and static ports
- fuel tank vents

Tires show low pressure in cold weather: the required adjustments to inflation pressure should be performed on tires cooled to ambient temperature.

If the crew detects ice, anti icing products are not allowed. To remove ice, tow the aircraft in the hangar and operate with a soft brush or a humid cloth.

**WARNING**

*Removal of snow/ice accumulations is necessary prior to take-off because they will seriously affect airplane performance. Aircraft with ice/snow accumulation is not cleared for flight.*

If the aircraft must be operated in cold weather conditions within the range -25ºC to -5ºC, it is suggested to perform following procedure in order to speed up the engine warm-up:

- Tow the airplane in a warm hangar (warmer than -5°C);
- Let airplane temperature stabilize;
- Check pressure in hydraulic system, recharge if necessary;
- Heat the cabin to a suitable value to avoid windshield frost in flight; an electrical fan heater may be used inside the cabin;
- Tow airplane outside and perform engine starting as soon as possible.

## 3.2 PRE-FLIGHT CHECK – AIRCRAFT WALK-AROUND

To perform the aircraft walk-around, carry out the checklists according to the pattern shown in Figure 4-1.

**WARNING**

*If ignition switches are turned ON, a propeller movement can cause the engine starting with consequent hazard for people nearby.*

NOTE

*Visual inspection is defined as follows: check for defects, cracks, de-lamination, excessive play, unsafe or improper installation as well as for general condition, presence of foreign objects, slippage markers etc. For control surfaces, visual inspection also involves additional check for freedom of movement. Always check the ground in the area of the aircraft for evidence of fuel, oil or operating fluids leakages.*

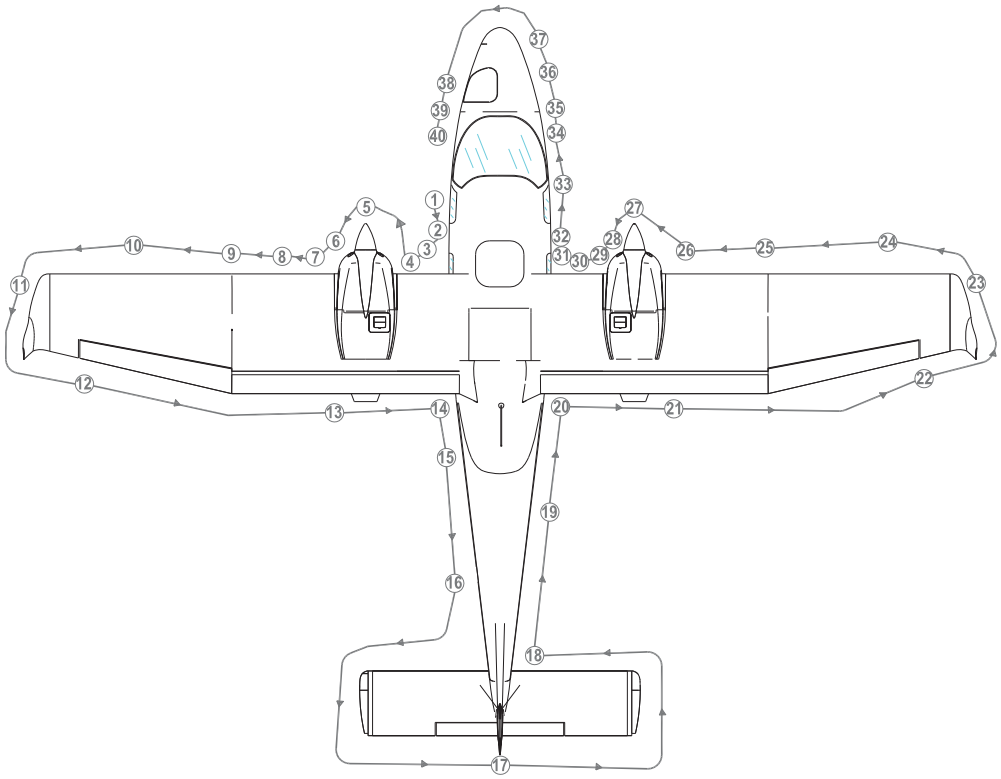



Figure 4.1

| | | |
|---|---|---|
| **1.** | Pilot door and cabin | *Check door for integrity. Turn ON the Master Switch and check Stall Warning switch for operation and condition; check lighting of Landing/Taxi/Nav/Strobe lights, then turn OFF the Master Switch.* |
| **2.** | Left main landing gear | *Check fuselage skin status, tire status (cuts, bruises, cracks and excessive wear), slippage markers integrity, gear structure and shock absorber, hoses, gear door attachments and gear micro-switches. There should be no sign of hydraulic fluid leakage.* |
| **3.** | Wheel chock | *Remove if employed* |
| **4.** | Propeller and spinner | *The propeller blades and spinner should be free of cracks, nicks, dents and other defects and should rotate freely. Check fixing and lack of play between blades and hub.* |
| **5.** | Left engine nacelle | *Perform following inspections:*<br>*a) Check the surface conditions.*<br>*b) Nacelle inlets and exhausts openings must be free of obstructions. If inlet and outlet plugs are installed, they should be removed.*<br>*c) Check radiators. There should be no indication of leakage of fluid and they have to be free of obstructions.*<br>*d) <u>Only before the first flight of a day</u>:*<br>*(1) Verify coolant level in the expansion tank, replenish as required up to top (level must be at least 2/3 of the expansion tank).*<br>*(2) Verify coolant level in the overflow bottle through the slot under the nacelle: level must be between min. and max. mark. Replenish if required removing the upper cowling; after that, install upper cowling checking for interferences with radiators*<br>*(3) Turn the propeller by hand to and fro, feeling the free rotation of 15°or 30° before the crankshaft starts to rotate. If the propeller can be turned between the dogs with practically no friction at all further investigation is necessary. Turn propeller by hand in direction of engine rotation several times and observe engine for odd noises or excessive resistance and normal compression.* |

| | | |
|---|---|---|
| | | *e) Check oil level and replenish as required. Prior to oil check, switch off both ignitions circuits and turn the propeller by hand in direction of engine rotation several times to pump oil from the engine into the oil tank. This process is finished when air is returning back to the oil tank and can be noticed by a murmur from the open oil tank. Prior to long flights oil should be added so that the oil level reaches the "max" mark.*<br>*f) Drain off Gascolator for water and sediment (drain until no water comes off). Then make sure drain valve is closed.*<br>*g) Check drainage hoses clamps*<br>*h) Verify all parts are fixed or locked.*<br>*i) Verify all inspection doors are closed.* |
| **6.** | Air induction system | *Check engine air inlet for integrity and correct fixing. The air intake filter must be free of obstructions.* |
| **7.** | Left fuel tank | *Check that the refuelling port cap is properly secured, then perform the fuel tank sump drainage operating the related valve which, after operation, must be checked closed. Fuel must checked for water and sediment. Verify the tank vent outlet is clear.* |
| **8.** | Landing and taxi lights | *Visual inspection* |
| **9.** | Left wing leading edge | *Visual inspection. Check cabin ventilation inlet and carburettor heating inlet for condition and free of obstruction. Check stall strip.* |
| **10.** | Left wing top and bottom panels | *Visual inspection* |
| **11.** | Left winglet, nav and strobe lights, static discharge wick | *Check for integrity and fixing* |
| **12.** | Left aileron and balance mass | *Visual inspection, remove tie-down devices and control locks if employed.* |
| **13.** | Left Flap and hinges | *Visual inspection* |
| **14.** | Left static port | *Remove protective cap – Visual inspection* |
| **15.** | Antennas | *Check for integrity* |

| | | |
|---|---|---|
| **16.** | Gear pump, external power and battery compartment | *Check emergency landing gear extension system pressure (low pressure limit: 20 bar), external power and battery compartments closure.* |
| **17.** | Horizontal and vertical empennage and tabs. Static discharge wicks. | *Check the actuating mechanism of control surfaces and the connection with related tabs. Check wicks for integrity. Remove tie-down device if employed.* |
| **18.** | Stabilator leading edge | *Check for integrity* |
| **19.** | Fuselage top and bottom skin | *Visual inspection* |
| **20.** | Right static port | *Remove protective cap – Visual inspection* |
| **21.** | Right Flap and hinges | *Visual inspection* |
| **22.** | Right aileron and balance weight | *Visual inspection, remove tie-down devices and control locks if employed.* |
| **23.** | Right winglet, nav and strobe lights, static discharge wick | *Check for integrity and fixing and lighting* |
| **24.** | Right wing top and bottom panels | *Visual inspection* |
| **25.** | Right wing leading edge | *Visual inspection. Check cabin ventilation inlet and carburettor heating inlet for condition and free of obstruction. Check stall strip.* |
| **26.** | Right fuel tank | *Check that the refuelling port cap is properly secured, then perform the fuel tank sump drainage operating the related valve which, after operation, must be checked closed. Fuel must checked for water and sediment. Verify the tank vent outlet is clear.* |
| **27.** | Propeller and spinner: | *The propeller blades and spinner should be free of cracks, nicks, dents and other defects and should rotate freely. Check fixing and lack of play between blades and hub.* |
| **28.** | Right engine nacelle | *Apply check procedure reported in the walk-around station 5 and 6.* |
| **29.** | Passenger door and cabin | *Check door for integrity. Check safety belts for integrity and baggage for correct positioning and fastening. Check ditching emergency exit safety lock. Check passengers ventilation ports for proper setting.* |

| | | |
|---|---|---|
| **30.** | Right main landing gear | *Apply check procedure reported in the walk-around Station 2* |
| **31.** | Wheel chock | *Remove if employed* |
| **32.** | Bottom fuselage antennas | *Check for integrity* |
| **33.** | Right cabin ram-air inlet | *Visual inspection* |
| **34.** | Right Pitot tube | *Remove protective cap and check for any obstruction* |
| **35.** | Nose landing gear | *Check tire status (cuts, bruises, cracks and excessive wear),slippage markers integrity, gear structure and retraction mechanism, shock absorber and gear doors attachments. There should be no sign of hydraulic fluid leakage.* |
| **36.** | Radome | *Check for integrity* |
| **37.** | Radome access door | *Visual inspection* |
| **38.** | Left Pitot tube | *Remove protective cap and check for any obstruction* |

NOTE

*Avoid blowing inside Pitot-tube and inside airspeed indicator system's static ports as this may damage instruments.*

INTENTIONALLYLEFT BLANK

## 3.3 COCKPIT INSPECTIONS

CAUTION

*Instruct passengers on how to use safety belts and normal / emergency exits. Passenger embarkation should be done, avoiding contact with hot / oily parts such as engine exhaust pipes, drainage tubes and wheel brakes, or sharp wing control surfaces edges. Do not smoke on board.*

CAUTION

*Clean the displays using a clean, lint-free cloth and an eyeglass lens cleaner that is specified as safe for anti-reflective coatings. Cleaners containing ammonia will harm the anti-reflective coating.*

| | | |
|---|---|---|
| **1.** | Parking brake | *CHECK ENGAGED* |
| **2.** | AFM and Garmin Pilot's Guide | *CHECK on board* |
| **3.** | Weight and balance | *CHECK if within the limits* |
| **4.** | Flight controls | *Remove seat belt used as lock* |
| **5.** | PFD and MFD | *CHECK clean* |
| **6.** | Seat | *Adjust as required* |
| **7.** | Seat belt | *Fastened* |
| **8.** | Passenger briefing | *Completed* |
| **9.** | Doors | *CLOSED AND LOCKED* |
| **10.** | Landing gear control lever | *CHECK DOWN* |
| **11.** | Breakers | *All IN* |
| **12.** | MASTER SWITCH | *ON* |
| **13.** | Fuel quantity | *CHECK* |
| **14.** | RH fuel selector | *RIGHT* |
| **15.** | LH fuel selector | *LEFT* |
| **16.** | RH Electrical Fuel Pump | *ON, check fuel pressure gauge correct operation.* |
| **17.** | RH Electrical Fuel pump | *OFF, check pressure decreased at zero* |
| **18.** | LH Electrical Fuel Pump | *ON, check fuel pressure gauge correct operation.* |
| **19.** | LH Electrical Fuel pump | *OFF, check pressure decreased at zero* |
| **20.** | Strobe light | *ON* |
| **21.** | Landing gear lights | *TEST* |
| **22.** | ELT | *CHECK set to ARM* |
| **23.** | Fire detector | *TEST* |
| **24.** | Engine levers friction | *Adjust if required* |
| **25.** | Flight controls | *CHECK free* |

| | | |
|---|---|---|
| **26.** | Alternate static port | *CHECK closed* |
| **27.** | Cabin heat | *CLOSED* |
| **28.** | Flaps | *Operate control to FULL position. Verify extension. Retract flaps.* |
| **29.** | Pitch trim control | *Set to neutral position.* |
| **30.** | Rudder trim control | *Set to neutral position.* |
| **31.** | Eng. Starting Battery Voltmeter (if installed) | *Check 12 to 14 Volt* |

## 3.4 ENGINE STARTING

**CAUTION**

*Avionics switches must be set OFF during engine starting to prevent avionic equipment damage.*

| | | |
|---|---|---|
| **1** | Start clearance | *Obtain if needed* |
| **2** | CHRONOMETER | *START* |

**Right engine starting**

| | | |
|---|---|---|
| **1** | RH Throttle lever | *IDLE* |
| **2** | RH Carburetor heat | *OFF* |
| **3** | RH Propeller Lever | *FULL FORWARD* |
| **4** | RH Choke | *ON if required* |

**NOTE**

***Cold engine***

*Throttles idle (fully closed), chokes fully opened.*
*Soon after starting, advance the throttle to let the propeller reach 800 RPM and slowly close the choke. Keep engine at 900 RPM for warm up period.*

***Hot engine***

*Park the aircraft with the nose pointing into wind in order to aid cooling.*
*Keep chokes closed and slowly open the throttles one inch while cranking.*

***Flooded Engine after engine start failure***

*Keep chokes closed, open throttle fully and start the engine, then quickly reduce throttles to idle*

| | | |
|---|---|---|
| **5** | RH Electrical Fuel pump | *ON, check advisory light ON and positive fuel press build up* |
| **6** | STROBES | *ON* |
| **7** | RH engine propeller zone | *CHECK free* |
| **8** | RH ignitions switches | *BOTH ON* |

WARNING

*Ensure that the area around engine propeller disc is clear from people and obstacles. Call out for propeller free.*

| | | |
|---|---|---|
| **9** | RH start pushbutton | *PUSH* |
| **10** | RH Field | *ON* |
| **11** | RH engine oil gauge | *CHECK if increasing within 10 sec. (max 7 bar in cold operation)* |
| **12** | RH Throttle lever | *Advance to reach 1200 RPM* |
| **13** | RH Choke | *OFF* |
| **14** | RH Avionics | *ON* |
| **15** | RH Cross bus | *ON* |
| **16** | RH Ammeter | *CHECK Amps positive* |
| **17** | Voltmeter | *CHECK 12 to 14 Volt* |
| **18** | Chronometer | *Start* |

**Left engine starting**

| | | |
|---|---|---|
| **1** | LH Throttle lever | *IDLE* |
| **2** | LH Carburetor heat | *OFF* |
| **3** | LH Propeller Lever | *FULL FORWARD* |
| **4** | LH Choke | *ON if required* |
| **5** | LH Electrical Fuel pump | *ON, check advisory light ON and positive fuel press build up* |
| **6** | LH engine propeller zone | *CHECK free* |
| **7** | LH ignitions switches | *BOTH ON* |

WARNING

*Ensure that the area around engine propeller disc is clear from people and obstacles. Call out for propeller free.*

| | | |
|---|---|---|
| **8** | LH start pushbutton | *PUSH* |
| **9** | LH Field | *ON* |
| **10** | LH engine oil gauge | *CHECK if increasing within 10 sec. (max 7 bar in cold operation)* |
| **11** | LH Throttle lever | *ADVANCE to reach 1200 RPM* |

| | | |
|---|---|---|
| **12** | LH Choke | *OFF* |
| **13** | LH Avionics | *ON* |
| **14** | LH Cross bus | *ON* |
| **15** | LH Ammeter | *CHECK Amps positive* |

## 3.5 BEFORE TAXIING

| | | |
|---|---|---|
| **1** | Let the engines warm up to a minimum oil temperature of 50°C at 1200 RPM | |
| **2** | Nav , Taxi and Landing lights | *ON* |
| **3** | Transponder | *Stand-by* |
| **4** | Passengers and crews seat belts | *Fastened* |
| **5** | Passengers and crews headphones | *Set as required* |

## 3.6 TAXIING

NOTE *Ensure that the main and passengers' doors warning lights are turned off.*

| | | |
|---|---|---|
| **1** | LH/RH Fuel Selector | *As required* |
| **2** | LH and RH fuel pressure | *Monitor* |
| **3** | Parking Brake | *RELEASE* |
| **4** | Flight instruments | *CHECK* |
| **5** | Engine instruments | *CHECK* |
| **6** | Altimeter | *SET both and crosscheck max difference 150 ft* |
| **7** | Brakes | *TEST* |

## 3.7 PRIOR TO TAKEOFF

| | | |
|---|---|---|
| **1** | Parking Brake | *ENGAGED* |
| **2** | RH Fuel Selector | *RIGHT* |
| **3** | LH Fuel Selector | *LEFT* |
| **4** | LH and RH fuel pressure | *CHECK* |
| **5** | LH and RH Engine parameters checks: | |

≠ Oil temperature: *90° ≡ 110° C*
*(or 50° ÷ 130 ° C, if MOD2006/002 is applied).*

- CHT / CT: *50° ≡ 135° / 120° C*
- Oil pressure: *2-5 bar (above 1400 RPM): 0.8 bar (below 1400 RPM)*
- Fuel pressure: *2.2 – 5.8 psi (0.15 - 0.40 bar)*
  **2.2 – 7.26 psi (0.15 – 0.50 bar)*

**applicable for fuel pump part no.893110 and no.893114*

| | | |
|---|---|---|
| **6** | LH and RH Generator lights | *CHECK BOTH OFF* |
| **7** | LH and RH Propeller Lever | *FULL FORWARD* |
| **8** | LH and RH Throttle Lever | *1650 RPM* |
| **9** | RH Ignitions switches | Set L / R / BOTH *(RPM drop with single ignition circuit selected must not exceed 130 prop's RPM; maximum RPM difference by use of either circuits LEFT or RIGHT cannot overcome 50 RPM)* |
| **10** | RH Propeller Lever | *GOVERNOR CHECK*<br>*a) Reduce prop speed to 1200 RPM;*<br>*b) move propeller lever back to full forward position;*<br>*c) repeat a) and b) 3 times;*<br>*d) verify that the governor closely and firmly controls the RPM;*<br>*e) verify that 1650 prop RPM are restored with prop lever in full forward position.* |

**NOTE** *Do not cause the propeller speed drop below 1150 RPM in any case.*

| | | |
|---|---|---|
| **11** | RH Carburettor heat | *ON, verify propeller RPM decreasing about 100 RPM* |
| **12** | RH Carburettor heat | *OFF* |
| **13** | RH engine instruments | *CHECK parameters if within green arcs* |
| **14** | LH Ignitions switches | Set L / R / BOTH *(RPM drop with single ignition circuit selected must not exceed 130 prop's RPM; maximum RPM difference by use of either circuits LEFT or RIGHT cannot overcome 50 RPM)* |

| | | |
|---|---|---|
| **15** | LH Propeller Lever | *GOVERNOR CHECK*<br>*a) Reduce prop speed to 1200 RPM;*<br>*b) move propeller lever back to full forward position;*<br>*c) repeat a) and b) 3 times;*<br>*d) verify that the governor closely and firmly controls the RPM;*<br>*e) verify that 1650 prop RPM are restored with prop lever in full forward position.* |

**NOTE** *Do not cause the propeller speed drop below 1150 RPM in any case.*

| | | |
|---|---|---|
| **16** | LH Carburettor heat | *ON, verify propeller RPM decreasing about 100 RPM* |
| **17** | LH Carburettor heat | *OFF* |
| **18** | LH engine instruments | *CHECK parameters if within green arcs* |
| **19** | LH and RH Fuel quantity indicator | *CHECK consistent with fuel plan* |
| **20** | Flaps | *T/O or as required (see Section 5, Take OFF performances)* |
| **21** | Pitch trim and rudder trim | *SET neutral position* |
| **22** | Flight controls | *Check free* |
| **23** | Seat belts fastened and doors closed and locked | *CHECK* |

## 3.8 LINE-UP

| | | |
|---|---|---|
| **1** | Parking Brake | *RELEASE, check full in* |
| **2** | Annunciator window | *CHECK cautions and warnings OFF* |
| **3** | RH Fuel Selector | *RIGHT* |
| **4** | LH Fuel Selector | *LEFT* |
| **5** | Pitot heat | *as required* |
| **6** | XPDR | *SET ALT* |
| **7** | Magnetic compass | *CHECK* |
| **8** | AHRS | *CROSS CHECK* |

## 3.9 TAKEOFF AND CLIMB

| | | |
|---|---|---|
| **1** | Landing light | *ON* |
| **2** | LH and RH Electrical Fuel pump | *BOTH ON* |
| **3** | Carburettors heat | *CHECK OFF* |
| **4** | LH and RH Propeller Lever | *FULL FORWARD* |
| **5** | LH and RH Throttle Lever | *FULL POWER* |
| **6** | Engines instruments | *Parameters within green arcs* |
| **7** | Rotation speed | |

| MTOW 1180kg | MTOW 1230 kg |
|---|---|
| *Vr = 64 KIAS* | *Vr = 65 KIAS* |

| | | |
|---|---|---|
| **8** | Apply brakes to stop wheel spinning | |
| **9** | Landing gear control knob | *UP: check green lights and TRANS light turned OFF within about 20"* |
| **10** | Landing and taxi lights | *OFF above 10000 ft* |
| **11** | LH and RH Propeller Lever | *Set max cont power at* safe altitude |

**CAU-TION**

*Max take off power must be limited to 5 minutes. Reduce Throttles MAP power before retracting Propeller to 2200 RPM or below.*

| | | |
|---|---|---|
| **12** | LH and RH Electrical Fuel pump | *BOTH OFF* |

NOTE

*It is recommended to retract landing gear when a positive climb rate is ensured at the applicable best speed ($V_Y$ or $V_X$ as necessary).*
*It has been demonstrated that best climb rate is always obtained with flaps in UP position: refer to Section 5, "Take off rate of climb" and "Enroute rate of climb" tables.*
*Noteworthily best climb gradient speed ($V_X$ )flaps UP is lower than best climb speed ($V_X$ )flaps T/O up to 6000 ft (density altitude).Refer to Section 5, "Best climb gradient speed" table.*

## 3.10 CRUISE

**1** LH and RH Propeller Lever *SET to 1900-2250 RPM*

CAUTION

*Throttles MAP decrease should be made before propeller speed reduction below 2200 RPM, as, contrariwise, Propeller Lever increase RPM should be set before engine Throttle Levers are advanced.*

**2** Engine parameters check (LH and RH)

≠ Oil temperature: *90° – 110° C*
*(or 50° - 130 ° C, if MOD2006/002 is applied).*

≠ CHT/CT: *50° – 135° / 50° - 120° C*

≠ Oil pressure: *2 - 5 bar.*

≠ Fuel pressure: *2.2 – 5.8 psi*
**2.2 – 7.26 psi (0.15 – 0.50 bar)*

**applicable for fuel pump part no.893110 and no.893114*

**3** Carburettor heat as needed *(see also instructions addressed on Section 3.*

WARNING

*Deselect and do not use Auto Pilot if possible icing condition area is inadvertently entered.*

**4** Fuel balance and crossfeed *check as necessary*

NOTE

*To evaporate possibly accumulated condensation water, once per flight day (for approximately 5 minutes) 100° C (212° F) oil temperature must be reached.*

## 3.11 TURBULENT AIR OPERATION

In keeping with good operating practice used in all aircraft, it is recommended that when turbulent air is encountered or expected, the airspeed be reduced to maneuvering speed to reduce the structural loads caused by gusts and to allow for inadvertent speed build-ups, which may occur as a result of the turbulence or of distractions caused by the conditions.

## 3.12 DESCENT AND APPROACH

| | | |
|---|---|---|
| **1** | Propellers | *Set to Max Continuous 2250 RPM* |
| **2** | Carburettors heat | *As required* |
| **3** | Altimeter setting | *QNH set and crosscheck* |

## 3.13 BEFORE LANDING

| | | |
|---|---|---|
| **1** | Rear passengers seats | *Seats set at full aft and lower position* |
| **2** | LH and RH Electrical Fuel pump | *BOTH ON* |
| **3** | On downwind leg: | |

| MTOW 1180kg | MTOW 1230 kg |
|---|---|
| $V_{FE}$= 119KIAS | $V_{FE}$=122KIAS |

*Flaps T/O*

| | | |
|---|---|---|
| **4** | Speed below applicable VLO/VLE | *Landing gear control knob - DOWN – Check green lights ON* |
| **5** | Carburettors heat | *CHECK OFF* |
| **6** | LH and RH Propeller Lever | *FULL FORWARD* |
| **7** | On final leg: speed below 93 KIAS | *Flaps FULL* |
| **8** | Final Approach Speed | |

| MTOW 1180kg | MTOW 1230 kg |
|---|---|
| $V_{APP}$= 70KIAS | $V_{APP}$=71KIAS |

| | | |
|---|---|---|
| **9** | Landing and taxi light | *ON* |
| **10** | Touchdown speed | *65 KIAS* |

## 3.14 BALKED LANDING/MISSED APPROACH

| | | |
|---|---|---|
| **1** | LH and RH Propeller Lever | *FULL FORWARD* |
| **2** | LH and RH Throttle Lever | *FULL POWER* |

CAUTION

*Propeller Lever increase to max RPM should be attained before engine Throttle Levers are advanced to max take off power. Max take off power must be limited to 5 minutes.*

| | | |
|---|---|---|
| **3** | Flaps | *T/O* |
| **4** | Speed | *Keep over 62 KIAS, climb to $V_Y$ or $V_X$ as applicable* |
| **5** | Landing gear | *UP as positive climb is achieved* |
| **6** | Flaps | *UP* |

NOTE

*It is recommended to retract landing gear when a positive climb rate is ensured at the applicable best speed ($V_Y$ or $V_X$ as necessary).*
*It has been demonstrated that best climb rate is always obtained with flaps in UP position: refer to Section 5, "Take off rate of climb" and "Enroute rate of climb" tables.*
*Noteworthily best climb gradient speed ($V_X$ )flaps UP is lower than best climb speed ($V_X$ )flaps T/O up to 6000 ft (density altitude).Refer to Section 5, "Best climb gradient speed" table.*

## 3.15 AFTER LANDING

| | | |
|---|---|---|
| **1** | LH and RH Electrical Fuel pump | *BOTH OFF* |
| **2** | Flaps | *0°* |
| **3** | Landing light | *OFF* |

## 3.16 PARKING/SHUT DOWN

**NOTE** *It is always suggested to park the aircraft with the nose pointing into wind to improve cooling after shut down.*

| | | |
|---|---|---|
| **1** | Parking brake | *Engage* |
| **2** | Taxi light | *OFF* |
| **3** | Engines | *Allow for cooling down 1 minute at idle power* |
| **4** | LH and RH AVIONIC BUS | *OFF* |
| **5** | LH and RH CROSS BUS | *OFF* |
| **6** | Flaps | *Check in UP* |
| **7** | Trims | *Check neutrals* |
| **8** | Navigation lights | *OFF* |

**NOTE** *Ensure the engine is at its lowest possible idle speed before selecting ignitions off.*

| | | |
|---|---|---|
| **9** | Ignitions | *Turn OFF one at time* |
| **10** | Doors safety locks | *Check OFF* |
| **11** | LH/RH Field | *OFF* |
| **12** | All external lights | *OFF* |
| **13** | Master Switch | *OFF* |
| **14** | Emg Batt / Emg cockpit light | *Check OFF* |

**WARNING**

*Before disembarkation verify propellers are fully stopped.*

**CAUTION**

*Instruct passengers to fully open pax door (against nacelle stop) and depart alongside aircraft fuselage, avoiding contact with hot / oily parts such as engine exhaust pipes, drainage tubes and wheel brakes, or sharp wing control surfaces edges.*

**CAUTION**

*Crew should avoid propeller disc area crossing while proceeding alongside a fully opened pilot's door (up to 110°).*

## 3.17 POSTFLIGHT CHECKS

| | | |
|---|---|---|
| **1** | Protective cover for Pitot tubes, stall warning and static port plugs. | *Install* |
| **2** | Lock one control wheel with safety belt. | |
| **3** | Wheel chocks | *Place under MLG* |
| **4** | Aileron lock | *Place and tighten* |
| **5** | Pilot and passengers doors. | *Close and latch* |

# 4. ADDITIONAL GUIDANCE FOR RNAV

Experience of RNAV systems, and Flight FMS in general, has identified the pitfalls of way-point entry error at the receiver as well as inaccuracies and errors in the database itself.

Research and experience have both shown that human error, often the result of a lack of familiarity with the airborne equipment, represents the major hazard in operations using RNAV systems. Therefore, it is imperative that pilots understand their system thoroughly and are able to determine whether it is safe to proceed.

This requires robust procedures, which check for possible errors in the computer database, monitor continued performance of the RNAV systems and enable pilots to identify and avoid not only their own mistakes but also errors in the information presented to them.

Flight planning on RNAV routes should include the following recommendation.

- During the pre-flight planning phase, given a GPS constellation of 23 satellites or less (22 or less for GPS stand-alone equipment that incorporate pressure altitude aiding), the availability of GPS integrity (RAIM) should be confirmed for the intended flight (route and time). This should be obtained from a prediction program either ground-based, or provided as an equipment function, or from an alternative method acceptable to the Authority;
- Where a navigation data base is installed, the data base validity (current AIRAC cycle) should be checked before flight;
- Traditional navigation equipment (e.g. VOR, DME and ADF) should be selected to available aids so as to allow immediate cross-checking or reversion in the event of loss of GPS navigation capability.

1) *Pre-flight Planning*

During the pre-flight planning phase, the availability of the navigation infrastructure, required for the intended operation, including any non-RNAV contingencies, must be confirmed for the period of intended operation. Availability of the onboard navigation equipment necessary for the route to be flown must be confirmed. The onboard navigation database must be appropriate for the region of intended operation and must include the navigation aids, waypoints, and coded terminal airspace procedures for the departure, arrival and alternate airfields.

Where the responsible airspace authority has specified in the AIP that dual PRNAV systems are required for specific terminal P-RNAV procedure, the availability of dual P-RNAV systems must be confirmed. This typically will apply where procedures are effective below the applicable minimum obstacle clearance altitude or where radar coverage is inadequate for the purposes of supporting P-RNAV. This will also take into account the particular hazards of a terminal area and the feasibility of contingency procedures following loss of P-RNAV capability.

RAIM availability must be confirmed with account taken of the latest information

2) *Departure*

At system initialisation, the flight crew must confirm that the navigation database is current and verify that the aircraft position has been entered correctly. The active flight plan should be checked by comparing the charts, SID or other applicable documents, with the map display. This includes confirmation of the waypoint sequence, reasonableness of track angles and distances, any altitude or speed constraints, and, where possible, which waypoints are fly-by and which are fly-over. If required by a procedure, a check will need to be made to confirm that updating will use a specific navigation aid(s), or to confirm exclusion of a specific navigation aid. A procedure shall not be used if doubt exists as to the validity of the procedure in the navigation database

**The creation of new waypoints by manual entry into the RNAV system by the flight crew is not permitted as it would invalidate the affected P-RNAV procedure.**

Route modifications in the terminal area may take the form of radar headings or 'direct to' clearances and the flight crew must be capable of reacting in a timely fashion. This may include the insertion in the flight plan of waypoints loaded from the database.

During the procedure and where feasible, flight progress should be monitored for navigational reasonableness, by cross-checks, with conventional navigation aids using the primary display

3) *Arrival*

Prior to the arrival phase, the flight crew should verify that the correct terminal procedure has been loaded. The active flight plan should be checked by comparing the charts with the map display. This includes confirmation of the waypoint sequence, reasonableness of track angles and distances, any altitude or speed constraints, and, where possible, which waypoints are fly-by and which are fly-over. If required by a procedure, a check will need to be made to confirm that updating will exclude a particular navigation aid. A procedure shall not be used if doubt exists as to the validity of the procedure in the navigation database.

Note: as a minimum, the arrival checks could be a simple inspection of a suitable map display that achieves the objectives of this paragraph.

**The creation of new waypoints by manual entry into the RNAV system by the flight crew would invalidate the P-RNAV procedure and is not permitted.**

Where the contingency to revert to a conventional arrival procedure is required, the flight crew must make the necessary preparation.

During the procedure and where feasible, flight progress should be monitored for navigational reasonableness by cross-checks with conventional navigation aids using the primary display

Route modifications in the terminal area may take the form of radar headings or 'direct to' clearances and the flight crew must be capable of reacting in a timely fashion.

Although a particular method is not mandated, any published altitude and speed constraints must be observed.

In the event that either the GPS or the EGNOS signal is not available at the destination, by the nature of the system, and its susceptibility to interference, there exists the possibility that it will also be unavailable over a wide area. Therefore, it is probable that the signal will also be unavailable at a nearby diversion aerodrome.

Notwithstanding any normal operational requirements for the identification of an alternate aerodrome, where a RNAV approach is to be flown in conditions where a visual approach will not be possible; pilots should always ensure that either:

1) A different type of approach system is available at the destination, not dependent on GPS data and for which the weather is forecast to be suitable to enable a landing to be made from that approach, or;
2) There is at least one alternate destination within range, where a different type of approach system is available, which is not dependent on GPS data and for which the weather is forecast to be suitable to enable a landing to be made from that approach.

## 4.1 APPROACH APPLICATIONS

**NOTE**

*When GPS is not approved for the selected final approach course, the message "NOT APPROVED FOR GPS" is displayed. GPS provides guidance for the approach, but the HIS must be switched to a NAV receiver to fly the final course of the approach*

**NOTE**

*If certain GPS parameters (SBAS, RAIM, etc.) are not available, some published approach procedures for the desired airport may not be displayed in the list of available approaches.*

An Approach Procedure (APPR) can be loaded at any airport that has one available, and provides guidance for non-precision and precision approaches to airports with published instrument approach procedures.

**NOTE**

*Only one approach can be loaded at a time in a flight plan. If an approach is loaded when another approach is already in the active flight plan, the new approach replaces the previous approach. The route is defined by selection of an approach and the transition waypoints.*

Whenever an approach is selected, the choice to either "load" or "activate" is given. "Loading" adds the approach to the end of the flight plan without immediately using it for navigation guidance. This allows continued navigation via the intermediate waypoints in the original flight plan, but keeps the procedure available on the Active Flight Plan Page for quick activation when needed. "Activating" also adds the procedure to the end of the flight plan but immediately begins to provide guidance to the first waypoint in the approach.

When selecting an approach, a "GPS" designation to the right of the procedure name indicates the procedure can be flown using the GPS receiver. Some procedures do not have

this designation, meaning the GPS receiver can be used for supplemental navigation guidance only.

**NOTE**

*If the GPS receiver cannot be used for primary guidance, the appropriate navigation receiver must be used for the selected approach (e.g., VOR or ILS). The final course segment of ILS approaches, for example, must be flown by tuning the NAV receiver to the proper frequency and selecting that NAV receiver on the CDI*

The G1000 SBAS GPS allows for flying LNAV and LPV approach service levels according to the published chart.

A sample of how the active approach service level is annunciated on the HSI is shown in the following table:

| HSI Annunciation | Description | Example on HSI |
|---|---|---|
| LNAV | RNAV GPS approach using published LNAV minima |  |
| LPV (available only if SBAS available) | RNAV GPS approach using published LPV minima | |

***Approach Service Level***

Before reaching the IAF, the flight crew should verify that the correct procedure has been loaded into the receiver's route or flight plan. A comparison with the approach chart should be made including the following:

- The waypoint sequence.
- Reasonableness of the tracks and distances of the approach legs, accuracy of the inbound course and mileage of the FAS.
- Verify from the charts, map display or CDU, which waypoints are fly-by and which are fly-over.
- Check any map display to ensure the track lines actually 'fly-over' or 'fly-by' the respective waypoints in the procedure.

By the time the aircraft reaches the IAF the pilot should have completed the above and been cleared for the approach. Also, the approach must have been activated in the receiver at least by this time.

Approach Applications which are classified as RNP Approach (APCH) in accordance with ICAO Doc 9613 Performance Based Navigation (PBN) Manual (and ICAO state Letter SP65/4-10/53) give access to minima (on an instrument approach procedure) designated as:

**LNAV (Lateral Navigation)**

This is a Non-Precision or 2D Approach with Lateral only navigation guidance provided by GNSS and an Aircraft Based Augmentation System (ABAS). Receiver Autonomous Integrity Monitoring (RAIM) is a form of ABAS. Lateral guidance is linear with accuracy to within +/- 0.3 NM parallel to either side of the final approach track.

**LPV (Localiser Performance with Vertical Guidance)**

This is an Approach Procedure with Vertical Guidance. The Lateral and Vertical guidance is provided by GPS and SBAS. Lateral and vertical guidance are angular with increasing sensitivity as the aircraft progresses down the final approach track; much like an ILS indication. LPV approach and annunciation on HSI is available only is SBAS available.


*Before selecting a LPV approach, make sure SBAS is indicated ACTIVE in the GPS status box on AUX-GPS STATUS page on MFD.*

*If DISABLED highlight the appropriate SBAS SELECTION Box under SBAS softkey under AUX-GPS Status Page on MFD*


*Should SBAS signal be lost, augmentation is lost. It may be possible to continue with LNAV only but this is reliant on the availability of RAIM.*

**NOTE:** The instrument approach procedures associated with RNP APCH are entitled RNAV (GNSS) to reflect that GNSS is the primary navigation system. With the inherent onboard performance monitoring and alerting provided by GNSS, the navigation specification qualifies as RNP, however these procedures pre-date PBN, so the chart name has remained as RNAV.

**Missed approach procedures**

Before commencing an RNAV (GNSS) missed approach, a MAP should be possible without reference to GPS derived navigation so that, in the event of a loss of GPS accuracy or loss of integrity during the approach, a safe return to above Minimum Sector Altitude can be made.

This may be possible by dead reckoning (DR) navigation but where this is not possible and the MAP requires reference to terrestrial navigation aids, these must be available, tuned and correctly identified before passing the IAF and remain available throughout the approach.

Reasons for a missed approach are many and if GPS information remains available for the MAP, the pilot must be able to sequence the system correctly past the MAP, in order to follow the published MAP correctly.

Pilots should be fully competent in the necessary selection routines required by their own equipment, in order to transition to the MAP and preserve accurate navigation throughout.

When GPS navigation is NOT available for the MAP, it may be necessary to reset the display function of the HSI/CDI to disengage GPS information and regain VOR/LOC display. Pilots must be fully conversant with navigation display selections in order safely to follow the MAP.

**Abnormal procedures for approaches**

As the aircraft approaches the FAF (LNAV Only, without SBAS), the receiver automatically perform a final RAIM prediction for the approach. The receiver will not enter the approach mode if this RAIM prediction is negative. In this case, the approach should be discontinued.

However, this RAIM check assumes availability of the full constellation and will not take account of scheduled interruptions or failures. This can lead to a successful RAIM prediction at this point when the RAIM function itself is not available.

If RAIM is lost after passing the FAF the equipment should continue to provide navigation, where possible for five minutes, before giving a RAIM loss indication and this should be enough to complete the approach.

Should RAIM detect an out of tolerance situation, a warning will be given and a missed approach should be initiated immediately

The approach should always be discontinued:

(a) If the receiver fails to engage the correct approach mode or;
(b) In case of Loss Of Integrity (LOI) monitoring or;
(c) Whenever the HSI/CDI indication (or GP indication where applicable) exceeds half scale displacement or;
(d) If a RAIM (or equivalent) warning is activated or;
(e) If RAIM (or equivalent) function is not available and annunciated before passing the FAF.

## 4.2 PBN (RNAV & RNP) OPERATIONAL ELIGIBILITY

The Garmin GNSS navigation system as installed in this airplane is approved for navigation using GPS and SBAS (within the coverage of a Satellite Based Augmentation System complying with ICAO Annex 10) for IFR en- route, terminal area, precision and non-precision approach operations.

Both GNSS receivers are required to be operating and receiving usable signals except for routes requiring only one Long Range Navigation sensor.

The G1000 System has been shown to be eligible for:

- B-RNAV (RNAV-5)
- RNAV1 / P-RNAV (RNP-1) Enroute and Terminal navigation
- RNP APCH LNAV (does not include APV BARO-VNAV operation which is not cleared)
- LPV with SBAS

provided that the G1000 is receiving usable navigation information from at least one GPS receiver.

# 5. GROUND TOWING, PARKING AND MOORING

## 5.1 TOWING

CAUTION

*When the a/c is moved on the ground, the Master Switch must be turned ON until the a/c is parked.*

To tow the aircraft it is necessary to use a metal stiff bar connected to the nose gear.

WARNING

*Do not turn nose wheel above 20° either side of center: greater steering angles can damage the wheel stop. The tow bar must be removed before engines starting.*

## 5.2 PARKING

**General**

Under normal weather conditions, the airplane may be parked and headed in a direction that will facilitate servicing without regard to prevailing winds. Ensure that it is sufficiently protected against adverse weather conditions and present no danger to other aircraft.

**Procedure**

1. Position airplane on levelled surface, headed into the prevailing wind, if practical.
2. Engage parking brake and install control locks
3. Secure pilot control wheel by wrapping the seat belt around it.

NOTE:

*Do not engage the parking brakes at low ambient temperature; accumulation of moisture may cause the brakes to freeze. In this case use wheel chocks.*

In case of long time parking or overnight parking, it is recommended to moor the a/c as shown on Para. 4.3.

CAUTION

*Mooring is strongly recommended when the wind is more than 15 knots and the a/c is completely refuelled.*

## 5.3 MOORING

The aircraft is moored to insure its immovability, protection, and security under various weather conditions.

CAUTION

*Mooring is strongly recommended when the wind is more than 15 knots and the a/c is completely refuelled.*

**Procedure**

1. Position airplane on levelled surface and headed into the prevailing wind.
2. Center nose wheel, engage parking brake and/or use the wheel chocks.

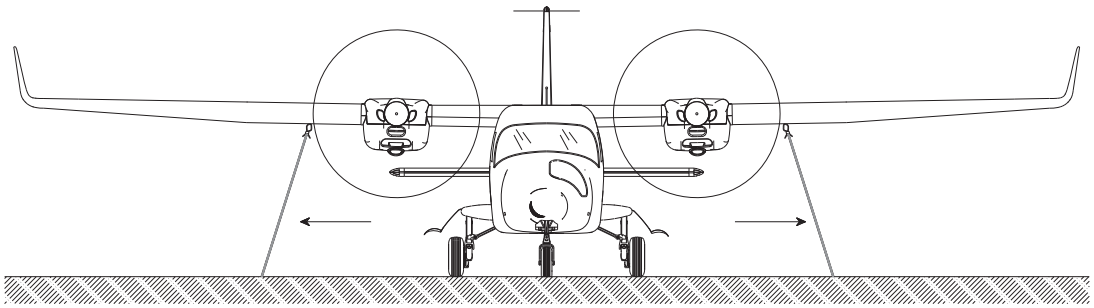
NOTE:

*Do not engage the parking brakes at low ambient temperature; accumulation of moisture may cause the brakes to freeze. In this case use wheel chocks.*

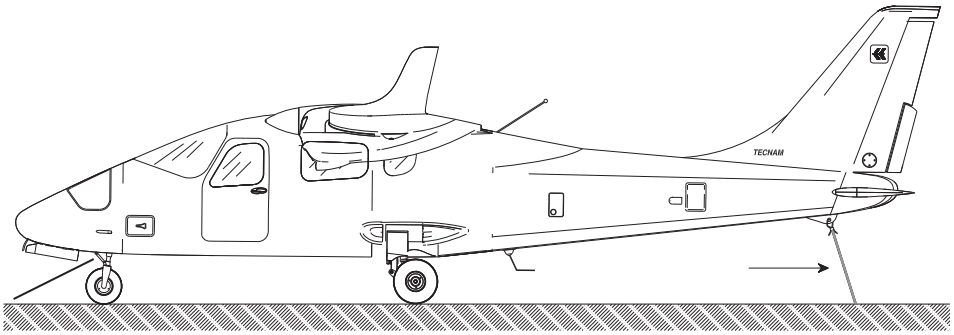
3. Secure pilot control wheel by wrapping the seat belt around it
4. Assure flaps are retracted
5. Electrically ground airplane, by connecting ground cable to the engine muffle
6. Install control locks and protective plugs.
7. Close and lock cabin doors.
8. Secure tie-down cables to the nose gear leg (in correspondence of the wheel fork) and to the wings and tail cone tie-down rings at approximately 45 degree with respect to the ground. (Refer to following figures)

NOTE:

*Additional preparation for high winds includes tie-down ropes from the main landing gear forks employment.*



**Mooring – front view**




**Mooring – side view**

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**Supplement G19: pages replacement instructions**

# SECTION 5 - PERFORMANCES

Apply following instruction:

**Supplement G19 – PERFORMANCES pages replace basic AFM Section 5 as a whole.**

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# SECTION 5 - PERFORMANCES

## INDEX

## 1. INTRODUCTION

This section provides all necessary data for an accurate and comprehensive planning of flight activity from takeoff to landing.

Data reported in graphs and/or in tables were determined using:

- "Flight Test Data" under conditions prescribed by EASA CS-23 regulation
- aircraft and engine in good condition
- average piloting techniques

Each graph or table was determined according to ICAO Standard Atmosphere (ISA - s.l.); evaluations of the impact on performances were carried out by theoretical means for:

airspeed
external temperature
altitude
weight
runway type and condition

## 2. USE OF PERFORMANCES CHARTS

Performances data are presented in tabular or graphical form to illustrate the effect of different variables such as altitude, temperature and weight. Given information is sufficient to plan the mission with required precision and safety.

Additional information is provided for each table or graph.

## 3. AIRSPEED INDICATOR SYSTEM CALIBRATION

Graph shows calibrated airspeed $V_{CAS}$ as a function of indicated airspeed $V_{IAS}$.

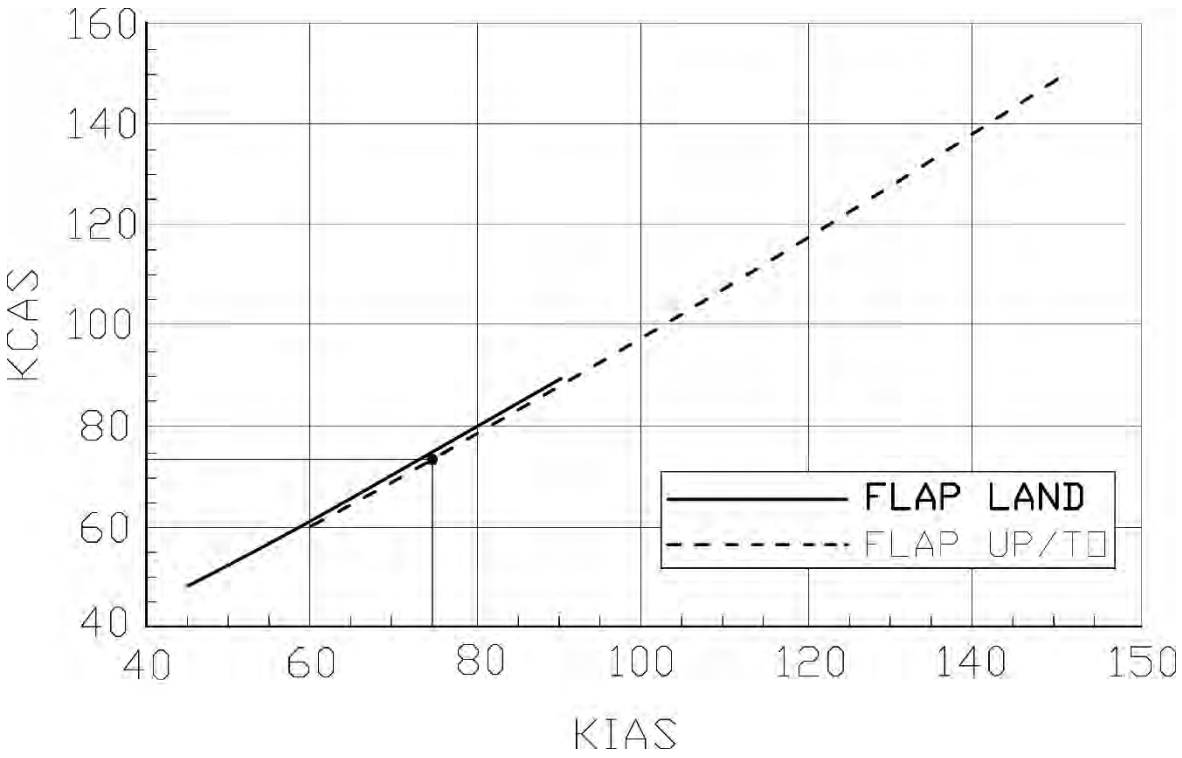
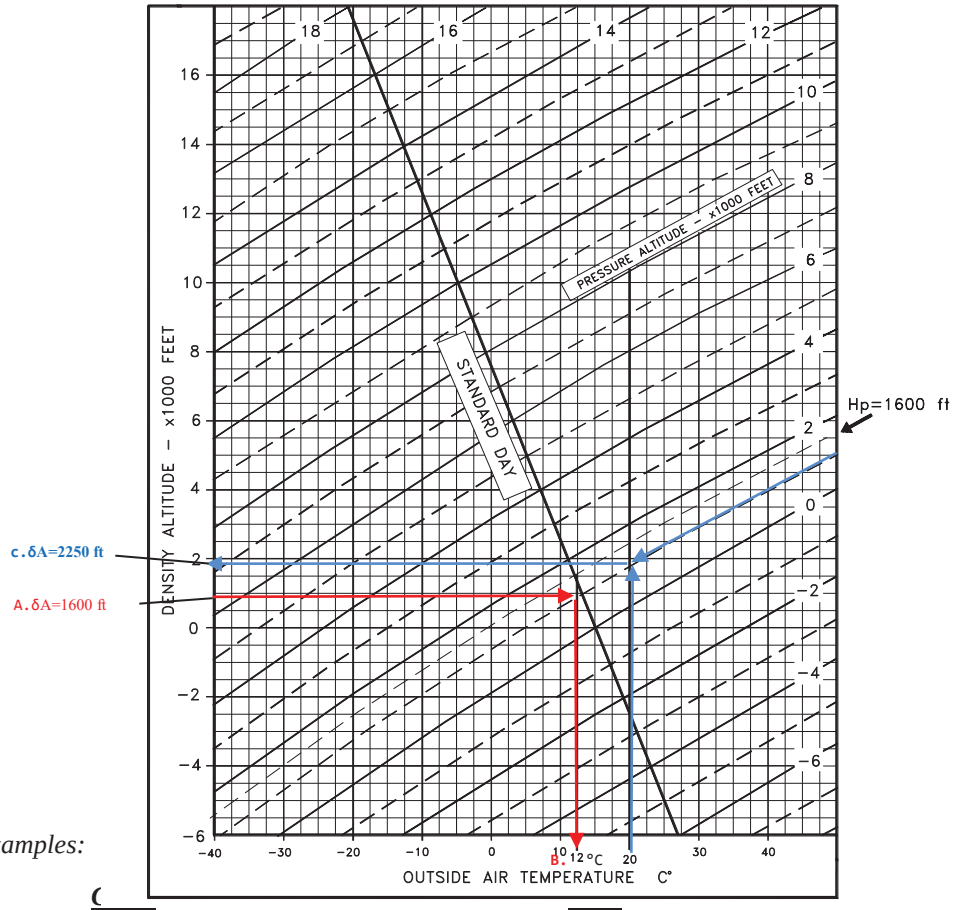



**Figure 1 - IAS/CAS chart**

*Example:*

| ***Given*** | ***Find*** |
|---|---|
| KIAS *75* | KCAS *74* |

## 4. ICAO STANDARD ATMOSPHERE




*Examples:*

a. Temperature = 20°C

b. Pressure altitude = 1600’

→ c. Corresponding Density Altitude = 2250’

***Given***

A. Pressure altitude = 1600’

ISA condition

***Find***

→ B. ISA Air Temperature = 12°C

## 5. STALL SPEED

**Weight:** *1230 kg (2712 lb)*
**Throttle Levers:** *IDLE*
**Landing Gear:** *Down*
**CG:** *Most Forward (16.5%)*
**No ground effect**

| WEIGHT | BANK ANGLE | STALL SPEED | | | | | |
|---|---|---|---|---|---|---|---|
| | | FLAPS 0° | | FLAPS T/O | | FLAPS FULL | |
| *[kg]* | *[deg]* | KIAS | KCAS | KIAS | KCAS | KIAS | KCAS |
| 1230 *(FWD C.G.)* | 0 | 66 | 65 | 59 | 57 | 54 | 55 |
| | 15 | 67 | 66 | 58 | 58 | 55 | 56 |
| | 30 | 71 | 70 | 61 | 61 | 59 | 59 |
| | 45 | 79 | 78 | 68 | 68 | 65 | 65 |
| | 60 | 95 | 93 | 83 | 81 | 79 | 78 |

NOTE

*Altitude loss during conventional stall recovery, as demonstrated during flight tests is approximately 250 ft with banking below 30°.*

## 6. CROSSWIND

*Maximum demonstrated crosswind is 17 Kts*

⇒ *Example:*

| ***Given*** | ***Find*** |
|---|---|
| Wind direction (*with respect to aircraft longitudinal axis*) = 30° | Headwind = 17.5 Kts |
| Wind speed = 20 Kts | Crosswind = 10 Kts |

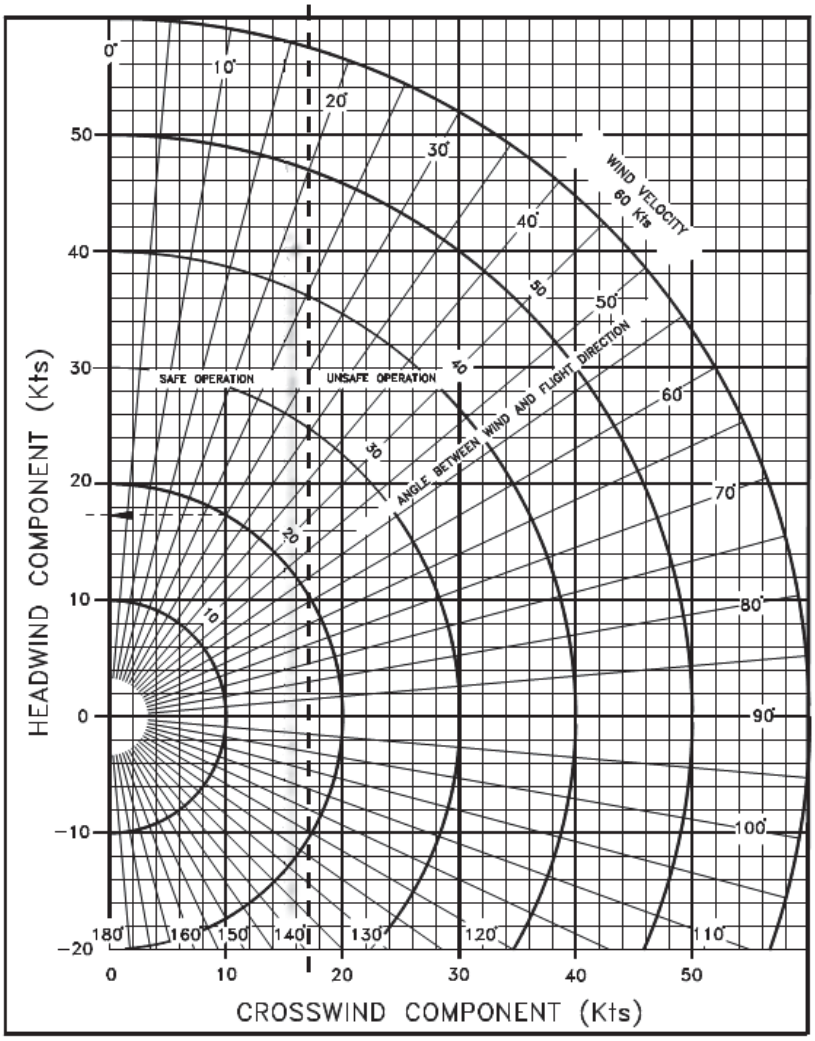



**Figure 3 – Crosswind diagram**

## 7. TAKEOFF PERFORMANCES

**Weight =** *1230 kg (2712 lb)*

**Flaps:** *T/O*
**Speed at Lift-Off =** *65 KIAS*
**Speed Over *50ft* Obstacle =** *70 KIAS*
**Throttle Levers:** *Full Forward*
**Runway:** *Grass*

**Corrections**

**Headwind:** - 2.5m for each kt (*8 ft/kt*)
**Tailwind:** + 10m for each kt (*33ft/kt*)
**Paved Runway:** - *6%* to Ground Roll
**Runway slope:** + 5% to Ground Roll for each +1%

| Pressure Altitude [ft] | | Distance [m] | | | | |
|---|---|---|---|---|---|---|
| | | Temperature [°C] | | | | ISA |
| | | -25 | 0 | 25 | 50 | |
| S.L. | Ground Roll | 207 | 263 | 328 | 401 | **301** |
| | *At 50 ft AGL* | 271 | 345 | 429 | 525 | **394** |
| 1000 | Ground Roll | 231 | 294 | 366 | 447 | **330** |
| | *At 50 ft AGL* | 303 | 385 | 479 | 586 | **432** |
| 2000 | Ground Roll | 258 | 328 | 409 | 500 | **362** |
| | *At 50 ft AGL* | 338 | 430 | 535 | 654 | **474** |
| 3000 | Ground Roll | 289 | 367 | 457 | 559 | **398** |
| | *At 50 ft AGL* | 378 | 480 | 598 | 731 | **521** |
| 4000 | Ground Roll | 323 | 411 | 511 | 625 | **438** |
| | *At 50 ft AGL* | 423 | 537 | 669 | 818 | **573** |
| 5000 | Ground Roll | 362 | 460 | 572 | 700 | **481** |
| | *At 50 ft AGL* | 473 | 602 | 749 | 916 | **630** |
| 6000 | Ground Roll | 405 | 515 | 642 | 785 | **530** |
| | *At 50 ft AGL* | 531 | 675 | 840 | 1027 | **694** |
| 7000 | Ground Roll | 455 | 578 | 720 | 880 | **584** |
| | *At 50 ft AGL* | 595 | 757 | 942 | 1152 | **765** |
| 8000 | Ground Roll | 511 | 650 | 809 | 989 | **645** |
| | *At 50 ft AGL* | 669 | 850 | 1059 | 1295 | **844** |
| 9000 | Ground Roll | 575 | 730 | 909 | 1112 | **712** |
| | *At 50 ft AGL* | 752 | 956 | 1190 | 1456 | **932** |
| 10000 | Ground Roll | 647 | 822 | 1023 | 1252 | **786** |
| | *At 50 ft AGL* | 847 | 1076 | 1340 | 1638 | **1029** |

**Weight =** *1080 kg (2381 lb)*

**Flaps:** *T/O*
**Speed at Lift-Off =** *65 KIAS*
**Speed Over *50ft* Obstacle =** *70 KIAS*
**Throttle Levers:** *Full Forward*
**Runway:** *Grass*

**Corrections**

**Headwind:** - 2.5m for each kt (*8 ft/kt*)
**Tailwind:** + 10m for each kt (*33ft/kt*)
**Paved Runway:** - *6%* to Ground Roll
**Runway slope:** + 5% to Ground Roll for each +1%

| Pressure Altitude [ft] | | Distance [m] | | | | |
|---|---|---|---|---|---|---|
| | | Temperature [°C] | | | | ISA |
| | | -25 | 0 | 25 | 50 | |
| S.L. | Ground Roll | 148 | 188 | 234 | 286 | **215** |
| | *At 50 ft AGL* | 193 | 246 | 306 | 374 | **281** |
| 1000 | Ground Roll | 165 | 210 | 261 | 319 | **235** |
| | *At 50 ft AGL* | 216 | 274 | 341 | 418 | **308** |
| 2000 | Ground Roll | 184 | 234 | 291 | 356 | **258** |
| | *At 50 ft AGL* | 241 | 306 | 381 | 466 | **338** |
| 3000 | Ground Roll | 206 | 262 | 326 | 398 | **284** |
| | *At 50 ft AGL* | 269 | 342 | 426 | 521 | **372** |
| 4000 | Ground Roll | 230 | 293 | 364 | 446 | **312** |
| | *At 50 ft AGL* | 301 | 383 | 477 | 583 | **409** |
| 5000 | Ground Roll | 258 | 328 | 408 | 499 | **343** |
| | *At 50 ft AGL* | 338 | 429 | 534 | 653 | **449** |
| 6000 | Ground Roll | 289 | 368 | 457 | 559 | **378** |
| | *At 50 ft AGL* | 378 | 481 | 599 | 732 | **495** |
| 7000 | Ground Roll | 324 | 412 | 513 | 628 | **417** |
| | *At 50 ft AGL* | 425 | 540 | 672 | 822 | **545** |
| 8000 | Ground Roll | 364 | 463 | 577 | 705 | **460** |
| | *At 50 ft AGL* | 477 | 606 | 755 | 923 | **602** |
| 9000 | Ground Roll | 410 | 521 | 648 | 793 | **508** |
| | *At 50 ft AGL* | 536 | 682 | 849 | 1038 | **664** |
| 10000 | Ground Roll | 461 | 586 | 730 | 893 | **561** |
| | *At 50 ft AGL* | 604 | 767 | 955 | 1168 | **734** |

**Weight = *930 kg (2051 lb)***

**Flaps:** *T/O*
**Speed at Lift-Off =** *65 KIAS*
**Speed Over *50ft* Obstacle =** *70 KIAS*
**Throttle Levers:** *Full Forward*
**Runway:** *Grass*

**Corrections**

**Headwind:** - 2.5m for each kt (*8 ft/kt*)
**Tailwind:** + 10m for each kt (*33ft/kt*)
**Paved Runway:** - *6%* to Ground Roll
**Runway slope:** + 5% to Ground Roll for each +1%

| Pressure Altitude [ft] | | Distance [m] | | | | |
|---|---|---|---|---|---|---|
| | | Temperature [°C] | | | | ISA |
| | | -25 | 0 | 25 | 50 | |
| S.L. | Ground Roll | 100 | 127 | 158 | 194 | **146** |
| | *At 50 ft AGL* | 131 | 167 | 207 | 254 | **190** |
| 1000 | Ground Roll | 112 | 142 | 177 | 216 | **160** |
| | *At 50 ft AGL* | 146 | 186 | 231 | 283 | **209** |
| 2000 | Ground Roll | 125 | 159 | 197 | 242 | **175** |
| | *At 50 ft AGL* | 163 | 208 | 258 | 316 | **229** |
| 3000 | Ground Roll | 140 | 177 | 221 | 270 | **192** |
| | *At 50 ft AGL* | 183 | 232 | 289 | 353 | **252** |
| 4000 | Ground Roll | 156 | 198 | 247 | 302 | **212** |
| | *At 50 ft AGL* | 204 | 260 | 323 | 395 | **277** |
| 5000 | Ground Roll | 175 | 222 | 277 | 338 | **233** |
| | *At 50 ft AGL* | 229 | 291 | 362 | 443 | **305** |
| 6000 | Ground Roll | 196 | 249 | 310 | 379 | **256** |
| | *At 50 ft AGL* | 257 | 326 | 406 | 496 | **335** |
| 7000 | Ground Roll | 220 | 280 | 348 | 426 | **282** |
| | *At 50 ft AGL* | 288 | 366 | 455 | 557 | **370** |
| 8000 | Ground Roll | 247 | 314 | 391 | 478 | **312** |
| | *At 50 ft AGL* | 323 | 411 | 512 | 626 | **408** |
| 9000 | Ground Roll | 278 | 353 | 440 | 538 | **344** |
| | *At 50 ft AGL* | 364 | 462 | 575 | 704 | **450** |
| 10000 | Ground Roll | 313 | 397 | 495 | 605 | **380** |
| | *At 50 ft AGL* | 409 | 520 | 648 | 792 | **498** |

## 8. TAKE-OFF RATE OF CLIMB AT $V_Y$

**Power Setting:** Maximum Continuous Power
**Flaps:** Take-Off
**Landing Gear:** Up

| Weight | Pressure Altitude | Climb Speed $V_Y$ | Rate of Climb [ft/min] | | | | |
|---|---|---|---|---|---|---|---|
| | | | Temperature [°C] | | | | ISA |
| [kg] | [ft] | [KIAS] | -25 | 0 | 25 | 50 | |
| 1230 | S.L. | 86 | 1276 | 1088 | 920 | 768 | 985 |
| | 2000 | 83 | 1133 | 948 | 783 | 634 | 873 |
| | 4000 | 79 | 990 | 809 | 646 | 500 | 761 |
| | 6000 | 76 | 848 | 670 | 510 | 366 | 649 |
| | 8000 | 73 | 707 | 531 | 374 | 233 | 537 |
| | 10000 | 70 | 565 | 393 | 239 | 100 | 425 |
| | 12000 | 67 | 425 | 256 | 104 | -32 | 313 |
| | 14000 | 64 | 285 | 118 | -30 | -164 | 201 |
| 1080 | S.L. | 85 | 1507 | 1302 | 1119 | 954 | 1190 |
| | 2000 | 82 | 1351 | 1150 | 970 | 808 | 1068 |
| | 4000 | 79 | 1196 | 998 | 822 | 662 | 946 |
| | 6000 | 76 | 1041 | 847 | 674 | 517 | 825 |
| | 8000 | 73 | 887 | 696 | 526 | 372 | 703 |
| | 10000 | 69 | 734 | 546 | 379 | 228 | 581 |
| | 12000 | 66 | 581 | 397 | 232 | 84 | 459 |
| | 14000 | 63 | 428 | 248 | 86 | -59 | 338 |
| 930 | S.L. | 85 | 1803 | 1575 | 1372 | 1189 | 1451 |
| | 2000 | 82 | 1630 | 1406 | 1206 | 1026 | 1315 |
| | 4000 | 79 | 1457 | 1238 | 1041 | 864 | 1180 |
| | 6000 | 75 | 1286 | 1070 | 877 | 703 | 1045 |
| | 8000 | 72 | 1114 | 902 | 713 | 542 | 909 |
| | 10000 | 69 | 944 | 735 | 549 | 382 | 774 |
| | 12000 | 65 | 774 | 569 | 387 | 222 | 639 |
| | 14000 | 62 | 604 | 404 | 224 | 63 | 503 |

## 9. TAKE-OFF RATE OF CLIMB AT $V_X$

**Power Setting:** Maximum Continuous Power
**Flaps:** Take-Off
**Landing Gear:** Up

| Weight | Pressure Altitude | Climb Speed $V_x$ | Rate of Climb at $V_x$ [ft/min] | | | | |
|---|---|---|---|---|---|---|---|
| | | | Temperature [°C] | | | | ISA |
| [kg] | [ft] | [KIAS] | -25 | 0 | 25 | 50 | |
| 1230 | S.L. | 78 | 1214 | 1037 | 880 | 738 | 941 |
| | 1000 | 76 | 1147 | 972 | 816 | 675 | 888 |
| | 2000 | 75 | 1080 | 906 | 751 | 612 | 836 |
| | 3000 | 74 | 1013 | 841 | 687 | 549 | 783 |
| | 4000 | 73 | 946 | 776 | 623 | 486 | 731 |
| | 5000 | 72 | 879 | 710 | 560 | 424 | 678 |
| | 6000 | 71 | 813 | 645 | 496 | 361 | 626 |
| | 7000 | 70 | 746 | 580 | 432 | 299 | 574 |
| 1080 | S.L. | 78 | 1283 | 1102 | 940 | 794 | 1002 |
| | 1000 | 76 | 1214 | 1034 | 874 | 729 | 949 |
| | 2000 | 75 | 1145 | 967 | 808 | 664 | 895 |
| | 3000 | 74 | 1076 | 900 | 742 | 600 | 841 |
| | 4000 | 73 | 1008 | 833 | 676 | 535 | 787 |
| | 5000 | 72 | 939 | 766 | 611 | 471 | 733 |
| | 6000 | 71 | 871 | 699 | 545 | 407 | 679 |
| | 7000 | 70 | 803 | 632 | 480 | 342 | 625 |
| 930 | S.L. | 78 | 1435 | 1243 | 1072 | 918 | 1138 |
| | 1000 | 76 | 1362 | 1172 | 1002 | 849 | 1081 |
| | 2000 | 75 | 1289 | 1101 | 932 | 780 | 1024 |
| | 3000 | 74 | 1216 | 1030 | 863 | 712 | 967 |
| | 4000 | 73 | 1144 | 958 | 793 | 644 | 910 |
| | 5000 | 72 | 1071 | 888 | 724 | 576 | 853 |
| | 6000 | 71 | 999 | 817 | 654 | 508 | 796 |
| | 7000 | 69 | 927 | 746 | 585 | 440 | 739 |

## 10. ENROUTE RATE OF CLIMB AT $V_Y$

**Power Setting:** Maximum Continuous Power
**Flaps:** Up
**Landing Gear:** Up

| Weight | Pressure Altitude | Climb Speed $V_y$ | Rate of Climb [ft/min] | | | | |
|---|---|---|---|---|---|---|---|
| | | | Temperature [°C] | | | | ISA |
| [kg] | [ft] | [KIAS] | -25 | 0 | 25 | 50 | |
| 1230 | S.L. | 84 | 1317 | 1135 | 973 | 827 | 1036 |
| | 2000 | 83 | 1179 | 1000 | 841 | 697 | 928 |
| | 4000 | 81 | 1041 | 865 | 709 | 568 | 819 |
| | 6000 | 80 | 904 | 731 | 577 | 439 | 711 |
| | 8000 | 78 | 767 | 598 | 446 | 310 | 603 |
| | 10000 | 77 | 631 | 464 | 316 | 182 | 495 |
| | 12000 | 75 | 495 | 332 | 186 | 54 | 387 |
| | 14000 | 73 | 360 | 199 | 56 | -73 | 279 |
| 1080 | S.L. | 83 | 1560 | 1360 | 1182 | 1022 | 1251 |
| | 2000 | 82 | 1408 | 1212 | 1037 | 879 | 1132 |
| | 4000 | 80 | 1257 | 1064 | 892 | 737 | 1014 |
| | 6000 | 78 | 1106 | 917 | 748 | 595 | 895 |
| | 8000 | 76 | 956 | 770 | 604 | 454 | 776 |
| | 10000 | 74 | 807 | 624 | 461 | 314 | 658 |
| | 12000 | 72 | 657 | 478 | 318 | 173 | 539 |
| | 14000 | 70 | 509 | 333 | 175 | 34 | 420 |
| 930 | S.L. | 82 | 1873 | 1649 | 1449 | 1269 | 1527 |
| | 2000 | 81 | 1703 | 1483 | 1286 | 1109 | 1393 |
| | 4000 | 79 | 1533 | 1317 | 1124 | 950 | 1260 |
| | 6000 | 77 | 1364 | 1151 | 962 | 791 | 1127 |
| | 8000 | 75 | 1196 | 987 | 800 | 632 | 994 |
| | 10000 | 73 | 1028 | 823 | 639 | 474 | 861 |
| | 12000 | 71 | 860 | 659 | 479 | 317 | 727 |
| | 14000 | 69 | 693 | 496 | 319 | 160 | 594 |

## 11. ENROUTE RATE OF CLIMB AT $V_X$

**Power Setting:** Maximum Continuous Power
**Flaps:** Up
**Landing Gear:** Up

| Weight | Pressure Altitude | Climb Speed $V_x$ | Rate of Climb at $V_x$ [ft/min] | | | | |
|---|---|---|---|---|---|---|---|
| | | | Temperature [°C] | | | | ISA |
| [kg] | [ft] | [KIAS] | -25 | 0 | 25 | 50 | |
| 1230 | S.L. | 72 | 1241 | 1073 | 924 | 789 | 982 |
| | 1000 | 72 | 1177 | 1011 | 863 | 729 | 932 |
| | 2000 | 72 | 1114 | 949 | 802 | 669 | 882 |
| | 3000 | 72 | 1050 | 887 | 741 | 609 | 832 |
| | 4000 | 72 | 986 | 825 | 680 | 550 | 782 |
| | 5000 | 72 | 923 | 763 | 619 | 490 | 732 |
| | 6000 | 71 | 860 | 701 | 559 | 431 | 682 |
| | 7000 | 71 | 797 | 639 | 498 | 371 | 632 |
| 1080 | S.L. | 72 | 1480 | 1295 | 1130 | 981 | 1194 |
| | 1000 | 72 | 1410 | 1226 | 1062 | 915 | 1139 |
| | 2000 | 72 | 1340 | 1158 | 995 | 848 | 1084 |
| | 3000 | 72 | 1269 | 1089 | 928 | 782 | 1029 |
| | 4000 | 71 | 1199 | 1020 | 861 | 717 | 973 |
| | 5000 | 71 | 1129 | 952 | 794 | 651 | 918 |
| | 6000 | 71 | 1059 | 884 | 727 | 585 | 863 |
| | 7000 | 71 | 990 | 815 | 660 | 520 | 808 |
| 930 | S.L. | 72 | 1787 | 1578 | 1391 | 1223 | 1463 |
| | 1000 | 72 | 1707 | 1500 | 1315 | 1148 | 1401 |
| | 2000 | 71 | 1628 | 1422 | 1239 | 1074 | 1339 |
| | 3000 | 71 | 1549 | 1345 | 1163 | 999 | 1277 |
| | 4000 | 71 | 1470 | 1268 | 1087 | 925 | 1215 |
| | 5000 | 71 | 1391 | 1190 | 1012 | 851 | 1153 |
| | 6000 | 71 | 1312 | 1113 | 936 | 777 | 1090 |
| | 7000 | 70 | 1233 | 1036 | 861 | 703 | 1028 |

## 12. ONE-ENGINE RATE OF CLIMB AT $V_{YSE}$

**Power Setting:** Maximum Continuous Power (operative engine)
propeller feathered (inoperative engine)
**Flaps:** Up
**Landing Gear:** Up

| Weight | Pressure Altitude | Climb Speed $V_{YSE}$ | Rate of Climb [ft/min] | | | | |
|---|---|---|---|---|---|---|---|
| | | | Temperature [°C] | | | | ISA |
| [kg] | [ft] | [KIAS] | -25 | 0 | 25 | 50 | |
| 1230 | S.L. | 84 | 330 | 230 | 142 | 62 | 176 |
| | 1000 | 83 | 292 | 193 | 106 | 26 | 147 |
| | 2000 | 82 | 254 | 157 | 69 | -9 | 117 |
| | 3000 | 81 | 216 | 120 | 33 | -44 | 87 |
| | 4000 | 80 | 179 | 83 | -3 | -80 | 58 |
| | 5000 | 79 | 141 | 46 | -38 | -115 | 28 |
| | 6000 | 79 | 104 | 10 | -74 | -150 | -1 |
| | 7000 | 78 | 67 | -27 | -110 | -185 | -31 |
| 1080 | S.L. | 80 | 436 | 330 | 235 | 149 | 271 |
| | 1000 | 80 | 396 | 290 | 196 | 111 | 240 |
| | 2000 | 79 | 355 | 251 | 157 | 73 | 208 |
| | 3000 | 79 | 315 | 211 | 118 | 35 | 176 |
| | 4000 | 79 | 275 | 172 | 80 | -3 | 145 |
| | 5000 | 79 | 234 | 132 | 41 | -41 | 113 |
| | 6000 | 78 | 194 | 93 | 3 | -78 | 81 |
| | 7000 | 78 | 154 | 54 | -35 | -116 | 50 |
| 930 | S.L. | 79 | 574 | 455 | 349 | 253 | 390 |
| | 1000 | 79 | 529 | 411 | 305 | 211 | 355 |
| | 2000 | 79 | 483 | 367 | 262 | 168 | 319 |
| | 3000 | 78 | 438 | 322 | 219 | 126 | 284 |
| | 4000 | 78 | 393 | 278 | 176 | 83 | 248 |
| | 5000 | 78 | 348 | 235 | 133 | 41 | 213 |
| | 6000 | 78 | 304 | 191 | 90 | -1 | 178 |
| | 7000 | 77 | 259 | 147 | 47 | -43 | 142 |

## 13. ONE-ENGINE RATE OF CLIMB AT $V_{XSE}$

**Power Setting:** Maximum Continuous Power (operative engine)
propeller feathered (inoperative engine)
**Flaps:** Up
**Landing Gear:** Up

| Weight | Pressure Altitude | Climb Speed $V_{XSE}$ | Rate of Climb at $V_{XSE}$ [ft/min] | | | | |
|---|---|---|---|---|---|---|---|
| | | | Temperature [°C] | | | | ISA |
| [kg] | [ft] | [KIAS] | -25 | 0 | 25 | 50 | |
| 1230 | S.L. | 83 | 325 | 227 | 140 | 61 | 174 |
| | 1000 | 82 | 288 | 191 | 104 | 26 | 145 |
| | 2000 | 81 | 251 | 155 | 69 | -9 | 116 |
| | 3000 | 81 | 214 | 118 | 33 | -44 | 86 |
| | 4000 | 80 | 177 | 82 | -2 | -78 | 57 |
| | 5000 | 79 | 140 | 46 | -38 | -113 | 28 |
| | 6000 | 78 | 103 | 10 | -73 | -148 | -1 |
| | 7000 | 77 | 66 | -26 | -108 | -183 | -30 |
| 1080 | S.L. | 79 | 424 | 321 | 229 | 147 | 265 |
| | 1000 | 79 | 385 | 283 | 192 | 110 | 234 |
| | 2000 | 79 | 346 | 245 | 155 | 73 | 204 |
| | 3000 | 79 | 307 | 207 | 117 | 37 | 173 |
| | 4000 | 79 | 268 | 169 | 80 | 0 | 143 |
| | 5000 | 78 | 229 | 131 | 43 | -36 | 112 |
| | 6000 | 78 | 190 | 93 | 6 | -73 | 81 |
| | 7000 | 78 | 152 | 55 | -31 | -109 | 51 |
| 930 | S.L. | 78 | 556 | 442 | 341 | 249 | 380 |
| | 1000 | 78 | 513 | 400 | 299 | 209 | 346 |
| | 2000 | 78 | 469 | 358 | 258 | 168 | 312 |
| | 3000 | 78 | 426 | 316 | 217 | 128 | 279 |
| | 4000 | 78 | 383 | 274 | 176 | 87 | 245 |
| | 5000 | 78 | 340 | 232 | 134 | 47 | 211 |
| | 6000 | 77 | 298 | 190 | 93 | 7 | 177 |
| | 7000 | 77 | 255 | 148 | 52 | -34 | 143 |

## 14. CRUISE PERFORMANCES

**Weight:** *1150 kg (2535 lb)*
**Pressure Altitude:** *0 ft*

| RPM* | MAP [inHg] | ISA – 30°C (-15°C) PWR | KTAS | F.C.** [lt/hr] | ISA (15°C) PWR | KTAS | F.C.** [lt/hr] | ISA + 30°C (45°C) PWR | KTAS | F.C.** [lt/hr] |
|---|---|---|---|---|---|---|---|---|---|---|
| **2250** | **29.5** | 103% | 143 | 28.6 | 97% | 145 | 27.1 | 92% | 146 | 25.8 |
| **2250** | **28** | 88% | 134 | 24.5 | 83% | 136 | 23.2 | 79% | 138 | 22 |
| **2250** | **26** | 69% | 122 | 19.2 | 65% | 124 | 18.2 | 62% | 125 | 17.3 |
| **2250** | **24** | 59% | 115 | 16.6 | 56% | 116 | 15.7 | 53% | 117 | 14.9 |
| **2250** | **22** | 46% | 103 | 12.8 | 43% | 103 | 12.1 | 41% | 103 | 11.5 |
| **2250** | **20** | 39% | 96 | 11 | 37% | 95 | 10.4 | 35% | 94 | 9.9 |
| **2100** | **28** | 84% | 132 | 23.5 | 80% | 134 | 22.2 | 76% | 135 | 21.1 |
| **2100** | **26** | 66% | 121 | 18.5 | 63% | 122 | 17.5 | 60% | 123 | 16.7 |
| **2100** | **24** | 57% | 114 | 16 | 54% | 114 | 15.1 | 52% | 115 | 14.4 |
| **2100** | **22** | 43% | 100 | 12.1 | 41% | 100 | 11.5 | 39% | 100 | 10.9 |
| **2100** | **20** | 37% | 92 | 10.2 | 35% | 91 | 9.7 | 33% | 89 | 9.2 |
| **1900** | **26** | 61% | 117 | 17.1 | 58% | 118 | 16.2 | 55% | 119 | 15.4 |
| **1900** | **24** | 53% | 110 | 14.9 | 50% | 111 | 14.1 | 48% | 111 | 13.4 |
| **1900** | **22** | 41% | 97 | 11.4 | 39% | 97 | 10.8 | 37% | 96 | 10.2 |
| **1900** | **20** | 35% | 89 | 9.6 | 33% | 88 | 9.1 | 31% | 85 | 8.7 |

* *Propeller RPM*
** *Fuel Consumption for each Engine*

**Weight:** *1150 kg (2535 lb)*
**Pressure Altitude:** *3000 ft*

| RPM* | MAP | ISA – 30°C (-21°C) | | | ISA (9°C) | | | ISA + 30°C (39°C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [inHg] | PWR | KTAS | F.C.** [lt/hr] | PWR | TCAS | F.C.** [lt/hr] | PWR | KTAS | F.C.** [lt/hr] |
| **2388** | **26.4** | 92% | 141 | 25.7 | 87% | 143 | 24.3 | 83% | 144 | 23.1 |
| **2250** | **26.4** | 89% | 139 | 25 | 85% | 141 | 23.6 | 80% | 143 | 22.4 |
| **2250** | **26** | 85% | 137 | 23.9 | 81% | 138 | 22.6 | 77% | 140 | 21.5 |
| **2250** | **24** | 72% | 128 | 20 | 68% | 129 | 18.9 | 64% | 130 | 18 |
| **2250** | **22** | 57% | 116 | 16 | 54% | 117 | 15.1 | 51% | 118 | 14.3 |
| **2250** | **20** | 48% | 108 | 13.4 | 45% | 108 | 12.7 | 43% | 108 | 12.1 |
| **2100** | **26.4** | 85% | 137 | 23.9 | 81% | 138 | 22.6 | 77% | 140 | 21.4 |
| **2100** | **26** | 82% | 134 | 22.8 | 77% | 136 | 21.6 | 73% | 137 | 20.5 |
| **2100** | **24** | 69% | 125 | 19.2 | 65% | 127 | 18.1 | 62% | 128 | 17.2 |
| **2100** | **22** | 54% | 114 | 15.2 | 51% | 114 | 14.3 | 49% | 115 | 13.6 |
| **2100** | **20** | 45% | 104 | 12.6 | 43% | 104 | 11.9 | 41% | 104 | 11.3 |
| **1900** | **26.4** | 78% | 132 | 21.9 | 74% | 134 | 20.7 | 70% | 135 | 19.6 |
| **1900** | **26** | 75% | 130 | 20.9 | 71% | 131 | 19.8 | 67% | 132 | 18.8 |
| **1900** | **24** | 63% | 121 | 17.7 | 60% | 122 | 16.7 | 57% | 123 | 15.9 |
| **1900** | **22** | 50% | 110 | 14.1 | 48% | 110 | 13.3 | 45% | 110 | 12.6 |
| **1900** | **20** | 42% | 101 | 11.7 | 40% | 101 | 11.1 | 38% | 100 | 10.6 |

* *Propeller RPM*
** *Fuel Consumption for each Engine*

**Weight:** *1150 kg (2535 lb)*
**Pressure Altitude:** *6000 ft*

| RPM* | MAP | ISA – 30°C (-27°C) | | | ISA (3°C) | | | ISA + 30°C (33°C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [inHg] | PWR | KTAS | F.C.** [lt/hr] | PWR | KTAS | F.C.** [lt/hr] | PWR | KTAS | F.C.** [lt/hr] |
| **2388** | **23.6** | 83% | 139 | 23.3 | 79% | 141 | 22 | 75% | 142 | 20.9 |
| **2250** | **23.6** | 81% | 138 | 22.6 | 76% | 139 | 21.4 | 73% | 141 | 20.3 |
| **2250** | **22** | 68% | 129 | 19.1 | 65% | 130 | 18.1 | 61% | 131 | 17.2 |
| **2250** | **20** | 57% | 119 | 15.8 | 54% | 120 | 14.9 | 51% | 120 | 14.2 |
| **2250** | **18** | 46% | 108 | 12.9 | 44% | 108 | 12.2 | 41% | 107 | 11.6 |
| **2100** | **23.6** | 77% | 135 | 21.6 | 73% | 137 | 20.4 | 69% | 138 | 19.4 |
| **2100** | **22** | 65% | 126 | 18.2 | 62% | 127 | 17.2 | 59% | 128 | 16.4 |
| **2100** | **20** | 54% | 116 | 15 | 51% | 116 | 14.1 | 48% | 117 | 13.4 |
| **2100** | **18** | 44% | 106 | 12.4 | 42% | 106 | 11.7 | 40% | 105 | 11.1 |
| **1900** | **23.6** | 71% | 130 | 19.8 | 67% | 132 | 18.7 | 64% | 133 | 17.8 |
| **1900** | **22** | 60% | 122 | 16.8 | 57% | 123 | 15.8 | 54% | 123 | 15 |
| **1900** | **20** | 50% | 112 | 13.9 | 47% | 112 | 13.1 | 44% | 112 | 12.4 |
| **1900** | **18** | 41% | 102 | 11.6 | 39% | 102 | 10.9 | 37% | 100 | 10.4 |

* *Propeller RPM*

** *Fuel Consumption for each Engine*

**Weight:** *1150 kg (2535 lb)*
**Pressure Altitude:** *9000 ft*

| RPM* | MAP [inHg] | ISA – 30°C (-33°C) | | | ISA (-3°C) | | | ISA + 30°C (27°C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | PWR | KTAS | F.C.** [lt/hr] | PWR | KTAS | F.C.** [lt/hr] | PWR | KTAS | F.C.** [lt/hr] |
| **2388** | **21.1** | 75% | 137 | 20.9 | 71% | 139 | 19.7 | 67% | 140 | 18.7 |
| **2250** | **21.1** | 73% | 136 | 20.3 | 69% | 137 | 19.2 | 65% | 138 | 18.2 |
| **2250** | **20** | 65% | 130 | 18.3 | 62% | 131 | 17.2 | 58% | 131 | 16.3 |
| **2250** | **18** | 53% | 118 | 14.9 | 50% | 119 | 14 | 48% | 118 | 13.3 |
| **2100** | **21.1** | 69% | 133 | 19.4 | 65% | 134 | 18.3 | 62% | 135 | 17.4 |
| **2100** | **20** | 62% | 127 | 17.4 | 59% | 128 | 16.4 | 56% | 128 | 15.6 |
| **2100** | **18** | 51% | 116 | 14.2 | 48% | 116 | 13.4 | 46% | 116 | 12.7 |
| **1900** | **21.1** | 64% | 128 | 17.8 | 60% | 129 | 16.8 | 57% | 130 | 15.9 |
| **1900** | **20** | 57% | 122 | 16 | 54% | 123 | 15.1 | 51% | 123 | 14.3 |
| **1900** | **18** | 47% | 112 | 13.2 | 44% | 112 | 12.4 | 42% | 111 | 11.8 |

* *Propeller RPM*
** *Fuel Consumption for each Engine*

**Weight:** *1150 kg (2535 lb)*
**Pressure Altitude:** *12000 ft*

| RPM* | MAP [inHg] | ISA – 30°C (-39°C) | | | ISA (-9°C) | | | ISA + 30°C (21°C) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | PWR | KTAS | F.C.** [lt/hr] | PWR | KTAS | F.C.** [lt/hr] | PWR | KTAS | F.C.** [lt/hr] |
| **2388** | **18.8** | 67% | 135 | 18.8 | 63% | 136 | 17.7 | 60% | 136 | 16.7 |
| **2250** | **18.8** | 65% | 133 | 18.2 | 61% | 134 | 17.2 | 58% | 134 | 16.3 |
| **2250** | **18** | 60% | 129 | 16.8 | 57% | 129 | 15.9 | 54% | 129 | 15 |
| **2100** | **18.8** | 62% | 130 | 17.4 | 59% | 131 | 16.4 | 56% | 132 | 15.5 |
| **2100** | **18** | 58% | 126 | 16.1 | 54% | 126 | 15.2 | 51% | 126 | 14.4 |
| **1900** | **18.8** | 57% | 125 | 15.9 | 54% | 126 | 15 | 51% | 126 | 14.2 |
| **1900** | **18** | 53% | 121 | 14.8 | 50% | 121 | 13.9 | 47% | 121 | 13.2 |

* *Propeller RPM*
** *Fuel Consumption for each Engine*

## 15. LANDING PERFORMANCES

**Weight =** *1230 kg (2712 lb)*

**Flaps:** *LAND*
**Short Final Approach Speed =** *70 KIAS*
**Throttle Levers:** *Idle*
**Runway:** *Grass*

**Corrections**

**Headwind:** - 5m for each kt (*16 ft/kt*)
**Tailwind:** + 11m for each kt (*36ft/kt*)
**Paved Runway:** - *2%* to Ground Roll
**Runway slope:** - 2.5% to Ground Roll for each +1%

| Pressure Altitude [ft] | | Distance [m] | | | | |
|---|---|---|---|---|---|---|
| | | Temperature [°C] | | | | ISA |
| | | -25 | 0 | 25 | 50 | |
| S.L. | Ground Roll | 199 | 219 | 239 | 259 | **231** |
| | *At 50 ft AGL* | 308 | 334 | 359 | 384 | **349** |
| 1000 | Ground Roll | 206 | 227 | 248 | 269 | **238** |
| | *At 50 ft AGL* | 318 | 344 | 370 | 396 | **358** |
| 2000 | Ground Roll | 214 | 236 | 257 | 279 | **245** |
| | *At 50 ft AGL* | 328 | 355 | 382 | 408 | **367** |
| 3000 | Ground Roll | 222 | 244 | 267 | 289 | **252** |
| | *At 50 ft AGL* | 348 | 377 | 406 | 434 | **385** |
| 4000 | Ground Roll | 230 | 254 | 277 | 300 | **260** |
| | *At 50 ft AGL* | 348 | 377 | 406 | 434 | **385** |
| 5000 | Ground Roll | 239 | 263 | 287 | 311 | **268** |
| | *At 50 ft AGL* | 359 | 389 | 419 | 448 | **395** |
| 6000 | Ground Roll | 248 | 273 | 298 | 323 | **276** |
| | *At 50 ft AGL* | 371 | 402 | 432 | 463 | **405** |
| 7000 | Ground Roll | 258 | 284 | 310 | 336 | **285** |
| | *At 50 ft AGL* | 382 | 415 | 446 | 478 | **416** |
| 8000 | Ground Roll | 268 | 295 | 322 | 349 | **294** |
| | *At 50 ft AGL* | 395 | 428 | 461 | 494 | **427** |
| 9000 | Ground Roll | 278 | 306 | 334 | 362 | **303** |
| | *At 50 ft AGL* | 408 | 442 | 476 | 510 | **438** |
| 10000 | Ground Roll | 289 | 318 | 348 | 377 | **313** |
| | *At 50 ft AGL* | 421 | 457 | 492 | 527 | **450** |

**Weight =** *1080 kg (2381 lb)*

**Flaps:** *LAND*
**Short Final Approach Speed =** *70 KIAS*
**Throttle Levers:** *Idle*
**Runway:** *Grass*

**Corrections**

**Headwind:** - 5m for each kt (*16 ft/kt*)
**Tailwind:** + 11m for each kt (*36ft/kt*)
**Paved Runway:** - *2%* to Ground Roll
**Runway slope:** - 2.5% to Ground Roll for each +1%

| Pressure Altitude [ft] | | Distance [m] | | | | |
|---|---|---|---|---|---|---|
| | | Temperature [°C] | | | | ISA |
| | | -25 | 0 | 25 | 50 | |
| S.L. | Ground Roll | 175 | 192 | 210 | 227 | **203** |
| | *At 50 ft AGL* | 271 | 293 | 315 | 337 | **306** |
| 1000 | Ground Roll | 181 | 199 | 218 | 236 | **209** |
| | *At 50 ft AGL* | 279 | 302 | 325 | 348 | **314** |
| 2000 | Ground Roll | 188 | 207 | 226 | 245 | **215** |
| | *At 50 ft AGL* | 288 | 311 | 335 | 358 | **322** |
| 3000 | Ground Roll | 195 | 215 | 234 | 254 | **222** |
| | *At 50 ft AGL* | 306 | 331 | 356 | 381 | **338** |
| 4000 | Ground Roll | 202 | 223 | 243 | 263 | **228** |
| | *At 50 ft AGL* | 306 | 331 | 356 | 381 | **338** |
| 5000 | Ground Roll | 210 | 231 | 252 | 273 | **235** |
| | *At 50 ft AGL* | 315 | 342 | 368 | 394 | **347** |
| 6000 | Ground Roll | 218 | 240 | 262 | 284 | **243** |
| | *At 50 ft AGL* | 325 | 353 | 380 | 406 | **356** |
| 7000 | Ground Roll | 226 | 249 | 272 | 295 | **250** |
| | *At 50 ft AGL* | 336 | 364 | 392 | 420 | **365** |
| 8000 | Ground Roll | 235 | 259 | 283 | 306 | **258** |
| | *At 50 ft AGL* | 347 | 376 | 405 | 434 | **375** |
| 9000 | Ground Roll | 244 | 269 | 294 | 318 | **266** |
| | *At 50 ft AGL* | 358 | 388 | 418 | 448 | **385** |
| 10000 | Ground Roll | 254 | 280 | 305 | 331 | **275** |
| | *At 50 ft AGL* | 370 | 401 | 432 | 463 | **395** |

**Weight =** *930 kg (2051 lb)*

**Flaps:** *LAND*

**Short Final Approach Speed =** *70 KIAS*

**Throttle Levers:** *Idle*

**Runway:** *Grass*

**Corrections**

**Headwind:** - 5m for each kt (*16 ft/kt*)

**Tailwind:** + 11m for each kt (*36ft/kt*)

**Paved Runway:** - *2%* to Ground Roll

**Runway slope:** - 2.5% to Ground Roll for each +1%

| Pressure Altitude [ft] | | Distance [m] | | | | |
|---|---|---|---|---|---|---|
| | | Temperature [°C] | | | | ISA |
| | | -25 | 0 | 25 | 50 | |
| S.L. | Ground Roll | 150 | 166 | 181 | 196 | **175** |
| | *At 50 ft AGL* | 233 | 252 | 271 | 290 | **264** |
| 1000 | Ground Roll | 156 | 172 | 187 | 203 | **180** |
| | *At 50 ft AGL* | 240 | 260 | 280 | 299 | **270** |
| 2000 | Ground Roll | 162 | 178 | 194 | 211 | **185** |
| | *At 50 ft AGL* | 248 | 268 | 288 | 309 | **277** |
| 3000 | Ground Roll | 168 | 185 | 202 | 219 | **191** |
| | *At 50 ft AGL* | 263 | 285 | 307 | 328 | **291** |
| 4000 | Ground Roll | 174 | 192 | 209 | 227 | **197** |
| | *At 50 ft AGL* | 263 | 285 | 307 | 328 | **291** |
| 5000 | Ground Roll | 181 | 199 | 217 | 235 | **203** |
| | *At 50 ft AGL* | 272 | 294 | 317 | 339 | **299** |
| 6000 | Ground Roll | 188 | 207 | 226 | 244 | **209** |
| | *At 50 ft AGL* | 280 | 304 | 327 | 350 | **307** |
| 7000 | Ground Roll | 195 | 215 | 234 | 254 | **215** |
| | *At 50 ft AGL* | 289 | 313 | 338 | 361 | **315** |
| 8000 | Ground Roll | 203 | 223 | 243 | 264 | **222** |
| | *At 50 ft AGL* | 299 | 324 | 349 | 373 | **323** |
| 9000 | Ground Roll | 210 | 232 | 253 | 274 | **229** |
| | *At 50 ft AGL* | 308 | 334 | 360 | 386 | **331** |
| 10000 | Ground Roll | 219 | 241 | 263 | 285 | **237** |
| | *At 50 ft AGL* | 319 | 346 | 372 | 399 | **340** |

## 16. BALKED LANDING CLIMB GRADIENT

Flight conditions (ISA and SL):

| | |
|---|---|
| **Weight:** | *1230 kg (2712 lb)* |
| **Throttle levers** | *Both FULL FORWARD* |
| **Flaps** | *T/O* |
| **Landing gear** | *DOWN* |
| **Weight** | *MTOW 1230kg (2712 lb)* |
| **Speed** | *72 KIAS* |
| **Climb gradient** | *9.4% (5.4°)* |

## 17. NOISE DATA

Noise level, determined in accordance with ICAO/Annex 16 4th Ed., July 2005, Vol. I°, Chapter 10, is **72.82** dB(A).

**Supplement G19: page replacement instructions**

# SECTION 6 - WEIGHT AND BALANCE

**See Basic AFM – Section 6**

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**Supplement G19: page replacement instructions**

# SECTION 7 - AIRFRAME and SYSTEMS DESCRIPTION

Apply following page replacement procedure:

| Supplement G19 – AIRFRAME and SYSTEMS DESCRIPTION page | | Basic AFM Section 7 page |
|---|---|---|
| S7-1 thru S7-2 | **REPLACE** | 7-1 thru 7-2 |
| S7-29 thru S7-42 | **REPLACE** | 7-29 thru 42 |
| | | |
| | | |
| | | |
| | | |

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# SECTION 7 – AIRFRAME and SYSTEMS DESCRIPTION

## INDEX

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## 16. MD302 Alternative Stand-By Instrument

In order to improve the digital version cockpit layout of the P2006T in terms of human-machine interface, weight saving and reliability this backup instrument V.1.0.5 is installed.

For more details refer to MOD2006/212.

**WARNING**

*All MD302 Stand-by Attitude Module settings, set up during the aircraft delivery or after a maintenance activity, must not be modified.*

**WARNING**

*In case of replacement of MD302 Stand-by Attitude Module, verify proper software load and confirm that its software version number is compliance with that one showed above, before install it.*

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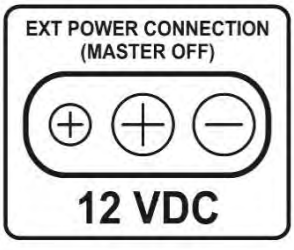
## 17. PLACARDS

In addition to the limitation placards reported on Section 2, following placards are installed on the aircraft.

NOTE

*Additionally, nearby the placards listed below (English language), directly-translated placards in the language of the country in which the airplane is registered can be installed, when required by the specific NAA.*

| Description | Placard | Place |
|---|---|---|
| ELT equipment location |  | Baggage compartment, right side |
| First Aid Kit location |  | Baggage compartment, aft cover panel |
| Fire extinguisher location |  | Cockpit floor, pilot side |
| Emergency gear extension compartment location |  | Removable cap |

| Description | Placard | Place |
|---|---|---|
| Emergency gear extension instructions |  | Emergency distributors compartment |
| Alternate static port location |  | Central pedestal, left side |
| Alternate static port operating instructions |  | Central pedestal, right side |
| Static ports location | STATIC PORT<br>KEEP CLEAN | Static ports: fuselage - both sides |
| Battery compartment location |  | Fuselage tail, left side |
| EXT power connection: socket schematic and instructions |  | Fuselage tail, left side |

| Description | Placard | Place |
|---|---|---|
| Landing gear hydraulic accumulator: low pressure limit |  | LG hydraulic compartment cap (fuselage tail, left side) |
| LG hydraulic compartment location |  | Fuselage tail, left side, in correspondence of LG hydraulic compartment cap |
| Towing limitations |  | Nose LG forward door |
| Stabilator excursion range |  | Fuselage tail, left side, in correspondence of the stabilator leading edge |
| Aircraft grounding |  | Close to the fuel filler cap |
| Engine coolant expansion tank location |  | Engine nacelle top side |

| Description | Placard | Place |
|---|---|---|
| Steel boards: a/c identification marks |  **(Sample)** | Fuselage tail, left side |
| Main LG tires inflation pressure values |  | MLG leg, LH and RH |
| Nose LG tire inflation pressure values |  | Nose LG fork |

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## 18. INSTRUMENTS PANEL


**GARMIN G1000 NXi - Instruments panel (typical layout)**

| Item | Description |
|---|---|
| **1** | GDU 1050 (PFD) |
| **2** | Audio Panel |
| **3** | A/P Programmer/Computer |
| **4** | GDU 1050 (MFD) |
| **5** | Main bus breaker panel |
| **6** | Ess bus breaker panel (RH) |
| **7** | Ess bus breaker panel (LH) |
| **8** | Avionic bus breaker panel (LH & RH) |
| **9** | Battery and Alternators (LH & RH) breakers |
| **10** | Cabin ventilation (RH) |
| **11** | Instrument light switch |
| **12** | Strobe light switch |

| Item | Description |
|---|---|
| **13** | Navigation light switch |
| **14** | Taxi light switch |
| **15** | Landing light switch |
| **16** | Cabin/Instruments/Panel lights dimmers |
| **17** | Flaps switch |
| **18** | MD-302 Standby Attitude Module |
| **19** | Cross bus 2 switch |
| **20** | RH battery switch |
| **21** | Cross bus 1 switch |
| **22** | Master switch |
| **23** | Avionics master switch 2 |
| **24** | Avionics master switch 1 |
| **25** | LH Battery Switch |
| **26** | Landing gear lever |
| **27** | Windshield defrost |
| **28** | Cabin heat |
| **29** | Cabin ventilation |
| **30** | Emergency Locator Transmitter switch |
| **31** | A/P master switch |
| **32** | Pitot heating switch |
| **33** | Rudder trim disconnect switch |
| **34** | Pitch trim disconnect switch |
| **35** | Electric fan switch |
| **36** | Fire detection system test switch |

# 19. ELECTRICAL SYSTEM

Primary DC power is provided by two engine-driven generators which, during normal operations, operate in parallel.

Each generator is rated of 40 Amps and 14 VDC, as the two voltage regulators. An automatic overvoltage device protects the circuits and the electric components from an excessive voltage caused by generator failures.

The power rating of each generator is such that if one generator fails the other one can still supply the airplane equipment to maintain flight safety.

Secondary DC power is provided by a main battery (lead type - 12 V, 23-Ah) and a secondary battery (lead type - 12V, 13 Ah).

An external DC power source can be connected to the aircraft distribution system in order to have it fed without starting the engine.

The ammeter section of the G1000 EIS can indicate the current supplied by either left or right generator switching a dedicated selector.

There are five different buses:

- Battery bus,
- LH Generator bus,
- RH Generator bus,
- LH Avionics bus,
- RH Avionics bus.

The distribution system operates as a single bus with power being supplied by the battery and both generators but it is possible to separate the left busses from the right busses when required by means of the Cross Bus switches.

The switches to enable and disable the alternators and battery are grouped in the master switches group and are located in the centre side of the instrument panel. Only the emergency switch, that allow to put in parallel both batteries is located in left side of the instrument panel.

All electrical loads are divided among the five busses on the basis of their importance and required power: equipment with duplicate functions is connected to separate busses.

The Battery bus, which supplies the most important loads, is energized from three sources: the battery and both generators. This allows the bus for remaining active also in case of two independent faults in the supply paths.

The following loads are connected to the battery bus:

| Breaker ID |
|---|
| Start LH |
| Start RH |
| Instr. Light |
| Fuel Pump LH |
| Fuel Pump RH |
| Strobe Light |
| E.I.S. 1 |
| E.I.S. 2 |
| COM 1 |
| GPS/NAV 1 |
| P.F.D. |
| A.D.I. |
| Turn Coordinator |
| Audio Panel |
| Cabin Fan |
| Actuator Flap |
| Door |
| Cabin Light |
| Fire |
| Cross LH |
| Cross RH |
| Instrument |
| Backup Battery |
| Landing Gear |
| Relay Landing Gear |
| Light Landing Gear |
| Fan |

• In addition, Emergency Light is connected directly on the battery.

| LH Cross Bus | RH Cross Bus | Avionic Bus LH | Avionic Bus RH |
|---|---|---|---|
| Field LH | Field RH | Trim A/P | COM 2 |
| Taxi Light | Rudder Trim | A/P | M.F.D. |
| Pitot Heat | Stall Warning | XPDR | A.D.F. |
| Regulator LH | Nav Light | D.M.E. | GPS/NAV 2 |
| | Landing Light | | A.D.C. |
| | Regulator RH | | Converter 12/24 |
| | | | AHRS |

On the central pedestal (see Figure below) there are seven switches disposed on two rows: on the first row there is the MASTER SWITCH which allows for connecting, through the battery relay, the battery to the battery bus.

LH and RH FIELD switches control the pertinent generator: setting the switch to OFF puts the pertinent generator off-line.

In correspondence of the second row there are 4 switches LH/RH AVIONIC and LH/ RH CROSS BUS.


**Central pedestal switches console**

The first two switches allow, through a relay, to cut off the power supply to the pertinent avionic bus.

The second ones allow, through a relay, for realizing the parallel connection between the pertinent generator bus and the battery bus. Setting these ones to OFF, the pertinent generator bus (and related avionic bus supplied) is separated from the battery bus and from opposite generator bus.

When both generators are correctly operating and all above mentioned switches are in ON position, all the busses are connected to the generators.

The ignition switches, two for each engine and grouped on the over head panel, are instead independent from the airplane electrical system (generation and distribution); they only control and open the engine electrical circuit.

**WARNING**

*If ignition switches are turned ON, a propeller movement can cause the engine starting with consequent hazard for people nearby.*

**Supplement G19: page replacement instructions**

# SECTION 8 – AIRCRAFT CARE AND MAINTENANCE

**See Basic AFM – Section 8**

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# SUPPLEMENT NO. G20 - GARMIN GTX345R TRANSPONDER

## Record of Revisions

| Rev | Revised page | Description of Revision | Tecnam Approval | | | EASA Approval or Under DOA Privileges |
|---|---|---|---|---|---|---|
| | | | DO | OoA | HDO | |
| 0 | - | First issue | A. Sabino | M. Oliva | L. Pascale | Approved under DOA No. EASA.21J.335 privileges. |
| | | | | | | |
| | | | | | | |
| | | | | | | |

## List of Effective Pages

| Page | Revision | Page | Revision |
|---|---|---|---|
| **G20-1** | Rev 0 | **G20-3** | Rev 0 |
| **G20-2** | Rev 0 | **G20-4** | Rev 0 |

## INTRODUCTION

This section contains supplemental information to operate the aircraft in a safe and efficient manner when equipped with Garmin GTX345R device.

## GENERAL

Garmin GTX345R is a transponder operating with A, C and S mode. Its user interface is part of GARMIN G950 NXi software

## LIMITATIONS

Garmin GTX345R manuals do not address operating limitations more severe than those usually applicable to the P2006T.

## EMERGENCY PROCEDURES

In case of emergency conditions, transponder is able to sent codified messages to the Air Traffic Control; messages are classified as follows:

| Code | Condition |
|---|---|
| 7500 | Aircraft subjected to illegal interference |
| 7600 | Loss of radio communications |
| 7700 | Emergencies |

## NORMAL OPERATIONS

### DETAILED OPERATING PROCEDURES

Normal operating procedures are described on GARMIN G950 NXi Pilot's guide (P/N 190-02286-00) rev. 00 or later versions.

**NOTE**

*GARMIN G950 NXi Pilot's guide (P/N 190-02286-00) - rev. 00 or later versions - must be carried onboard the airplane at all times.*

## PERFORMANCES

Garmin GTX345R employment does not affect the aircraft performances

## WEIGHT AND BALANCE

See Section 6 of this Manual.

## SYSTEMS

GTX 345R is a Mode S transponder with ADS-B extended squitter capability and also includes UAT and 1090 receivers for ADS-B IN/OUT capabilities. It is mounted on a rack, located behind the PFD.

It delivers up to 250 watts of nominal power. The PFD displays the code, reply symbol and mode of operation; in the event of PFD failure the system switches to reversionary mode and the transponder interface can be operated from MFD.

The GTX 345R is connected to both GIA63W and to XPDR antenna.


**Figure 1 – Garmin GTX 345R**

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# SUPPLEMENT NO. G21

# BECKER 3500 ADF FOR GARMIN NXI

## Record of Revisions

| Rev | Revised page | Description of Revision | Tecnam Approval | | | EASA Approval or Under DOA Privileges |
|---|---|---|---|---|---|---|
| | | | DO | OoA | HDO | |
| 0 | - | First issue | A. Sabino | C. Caruso | M. Oliva | Approved under DOA privileges. |
| | | | | | | |
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## List of Effective Pages

| Page | Revision |
|---|---|
| **G21-1** | Rev 0 |
| **G21-2** | Rev 0 |

## GENERAL

Refer to basic AFM.

## LIMITATIONS

Refer to basic AFM.

## EMERGENCY PROCEDURES

Refer to basic AFM.

## NORMAL PROCEDURES

The user interface of Becker 3500 ADF system is part of the GARMIN NXi Suite software.

Normal operating procedures are described on GARMIN NXi Pilot's guide.

NOTE

*GARMIN NXi Pilot's guide (P/N 190-02286-00) - rev. 00 or later versions - must be carried onboard the airplane at all times.*

## PERFORMANCE

Refer to basic AFM.

## WEIGHT AND BALANCE

Refer to basic AFM.

## AIRFRAME AND SYSTEMS DESCRIPTION

Refer to basic AFM.

## AIRCRAFT CARE AND MAINTENANCE

Refer to basic AFM.

# SUPPLEMENT NO. G22

# GARMIN GTS800 TAS FOR GARMIN NXI

## Record of Revisions

| Rev | Revised page | Description of Revision | Tecnam Approval | | | EASA Approval or Under DOA Privileges |
|---|---|---|---|---|---|---|
| | | | DO | OoA | HDO | |
| 0 | - | First issue | A. Sabino | C. Caruso | M. Oliva | Approved under DOA privileges. |
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## List of Effective Pages

| Page | Revision |
|---|---|
| **G21-1** | Rev 0 |
| **G21-2** | Rev 0 |

## GENERAL

Refer to basic AFM.

## LIMITATIONS

Refer to basic AFM.

## EMERGENCY PROCEDURES

Refer to basic AFM.

## NORMAL PROCEDURES

The user interface of GARMIN GTS800 TAS system is part of the GARMIN Suite software.

Normal operating procedures are described on GARMIN NXi Pilot's guide .

NOTE

*GARMIN G950 Pilot's guide (P/N 190-02286-00) - rev. 00 or later versions - must be carried onboard the airplane at all times.*

## PERFORMANCE

Refer to basic AFM.

## WEIGHT AND BALANCE

Refer to basic AFM.

## AIRFRAME AND SYSTEMS DESCRIPTION

Refer to basic AFM.

## AIRCRAFT CARE AND MAINTENANCE

Refer to basic AFM.