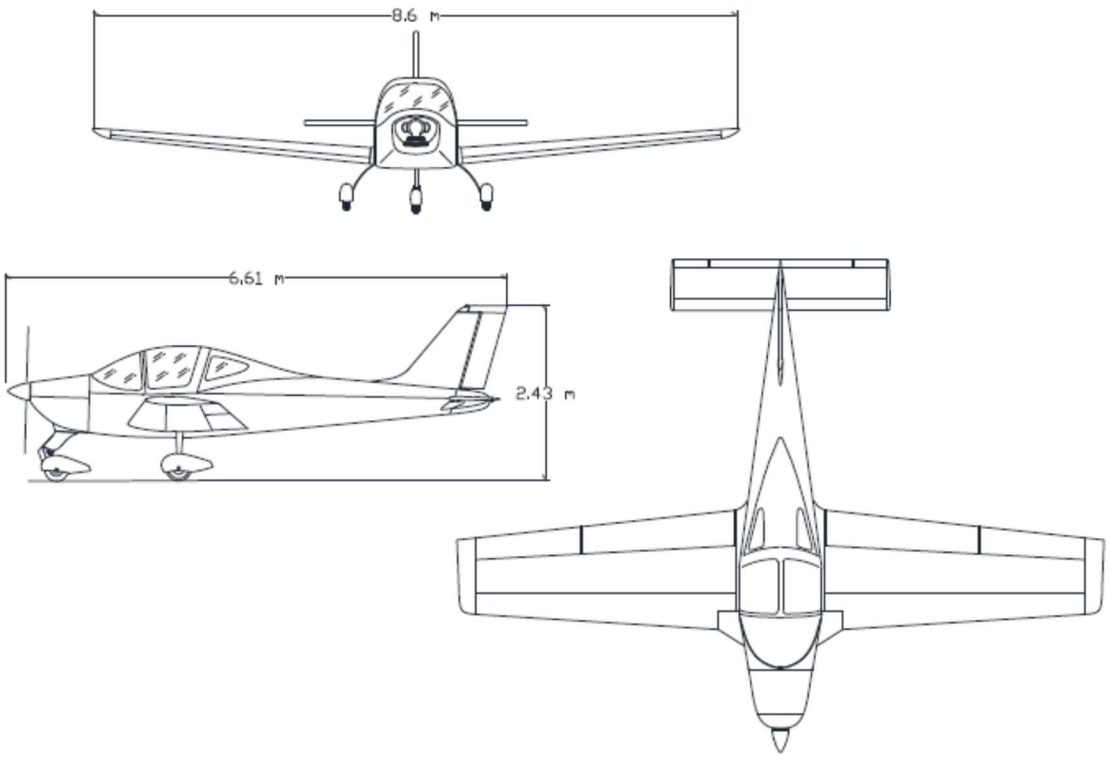
ADRIANA AVIATION



STANDARD OPERATING PROCEDURES

TECNAM P20002 JF

This Handbook was introduced for use in the ATO ADRIANA AVIATION by the order of Head of Training

Ordinance No. ……..,
dated ……
(HT Signature)

GENERAL INFORMATION

The P2002-JF is a twin seat, single engine aircraft with a tapered, low wing. Fixed main landing gear and steerable nose wheel.
Before using the airplane, you are recommended to read carefully this manual: a deep knowledge of airplane features and limitations will allow you for operating the airplane safely.

The aircraft is certified in normal category in accordance with EASA CS-VLA regulation.
Non aerobatic operations include:

Any manoeuvre pertaining to “normal” flight
Stalls (except whip stalls)
Lazy eights
Chandelles
Turns in which the angle of bank is not more than 60°

Acrobatic manoeuvres, including spins and turns with angle of bank of more than 60°, are not approved for such a category.

WARNING = The non-observation of the corresponding procedure can lead, as immediate effect, to a significant reduction of the flight safety.

CAUTION = The non-observation of the corresponding procedure can lead to an equipment damage which leads to a reduction of the flight safety in a short or longer time interval.

1 LIMITATION

1.1 SPEED LIMITATIONS

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

SPEED			KIAS	KCAS	REMARKS
V_{NE}	*Never exceed speed*		*141*	*138*	Never exceed this speed in any operation.
V_{NO}	*Maximum Structural Cruising Speed*		*112*	*108*	Never exceed this speed unless in smooth air, and then only with caution.
V_A	*Manoeuvring speed*		*98*	*96*	Do not make full or abrupt control movements above this speed as this may cause stress in excess of limit load factor
V_{FE}	*Maximum flap extended speed*	**LDG**	*68*	*70*	Do not exceed these speeds with the given flap setting.
		APP	*99*	*97*	

1.2 AIRSPEED INDICATOR MARKINGS

Airspeed indicator markings and their colour code are explained in the following table.
Garmin G500 Airspeed Indicator displays airspeed on a rolling number gauge using a moving tape: a color-coded (white, green, yellow, and red/white "barber pole") speed range strip is located on the moving tape.

MARKING	KIAS	SIGNIFICANCE
White band	**31 - 68**	Positive Flap Operating Range (lower limit is V_{SO}, at maximum weight [600 kg] and upper limit is the maximum speed permissible with landing flaps extension).
Green band	**41 – 112**	Normal Operating Range (lower limit is VS1 at maximum weight [600 kg] and most forward c.g. with flaps retracted and upper limit is maximum structural speed V_{NO}).
Yellow band	**112 - 141**	Manoeuvres must be conducted with caution and only in smooth air.
Red line	**141**	Maximum speed for all operations.

1.3 NORMAL OPERATIONS

Following airspeeds are significant for normal operations, with reference to each MTOW: 580 kg, 600 kg (if Supplement A11 - Increased MTOW @600 KG – is applicable) and 620 kg (if Supplement A12 - Increased MTOW @620 KG – is applicable).

		MTOW		
	FLAPS	580kg	600 kg	620 kg
Rotation Speed (in take-off, V_R)	T/O	*42 KIAS*	*42 KIAS*	*42 KIAS*
Best Angle-of-Climb Speed (V_X)	0°	*56 KIAS*	*56 KIAS*	*56 KIAS*
Best Rate-of-Climb speed (V_Y)	0°	*66 KIAS*	*66 KIAS*	*66 KIAS*
Approach speed	T/O	*66 KIAS*	*66 KIAS*	*66 KIAS*
Final Approach Speed	FULL	*51 KIAS*	*51 KIAS*	*51 KIAS*
Manoeuvring speed (V_A)	0°	*96 KIAS*	*98 KIAS*	*100 KIAS*
Never Exceed Speed (V_{NE})	0°	*138 KIAS*	*141 KIAS*	*142 KIAS*

1.4 STALL SPEED

Weight: *580 kg*
Throttle Levers: *IDLE*
CG: *Most Forward (26%)*
No ground effect

WEIGHT	BANK ANGLE	STALL SPEED					
		FLAPS 0°		FLAPS T/O		FLAPS FULL	
[kg]	*[deg]*	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
580 *(FWD C.G.)*	0	40	49	35	46	30	39
	15	41	50	36	47	31	40
	30	45	53	40	49	34	42
	45	53	58	47	54	41	47
	60	67	70	61	65	53	56

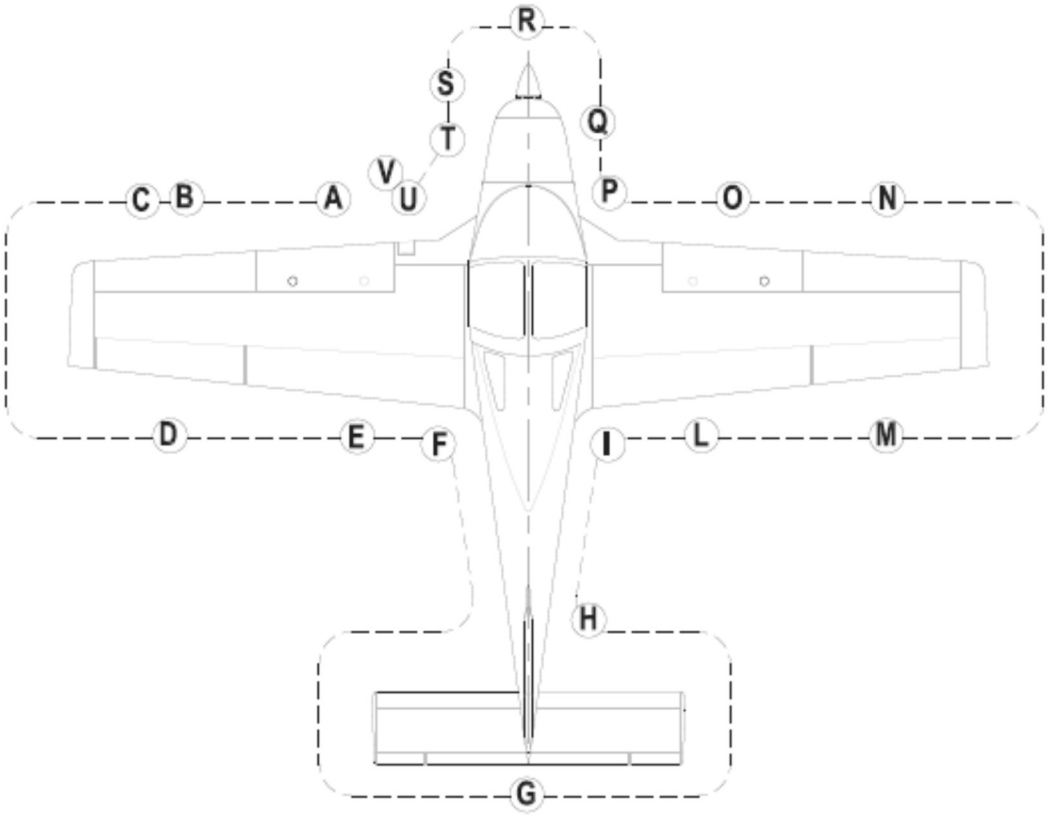
2 NORMAL PROCEDURES

2.1 PRE-FLIGHT CHECK – AIRCRAFT WALK-AROUND

Visual inspection is defined as follows: check for defects, cracks, detachments, excessive play, unsafe or improper installation as well as for general condition. For control surfaces, visual inspection also involves additional check for freedom of movement and security. Red lubber lines on bolts and nuts shall be intact.

Fuel level indicated by the cockpit-televels should be verified by visual check of actual fuel quantity embarked in the tanks.

Fuel drainage operation must be carried out with the aircraft parked on a level surface. Set Cockpit Fuel Selector Valve to on prior to drain fuel circuit nose section valve.



Before each flight, it is necessary to carry out a complete aircraft check comprising an external inspection followed by a cockpit inspection as below detailed.
Technical log book
Training of record keeping in the technical logbook

A Left fuel filler cap: check visually for desired fuel level. Drain the left fuel tank by drainage valve using a cup to collect fuel (drainage operation must be carried out with the aircraft parked on a level surface). Check for water or other contaminants. Close filler cap.

B Remove protection plug (if provided) and check the Pitot tube and the static ports mounted on left wing are unobstructed; do not blow inside vents.

C Left side leading edge and wing skin: visual inspection

D Left aileron, trim tab and hinges: visual inspection, check free of play, friction; Left tank vent: check for obstructions.

E Left flap and hinges: visual inspection

F Left main landing gear: check inflation, tire condition, alignment, fuselage skin condition.
G Horizontal tail and tab: visual inspection, check free of play, friction.
H Vertical tail, rudder and trim tab: visual inspection, check free of play, friction.
I Right main landing gear; check inflation, tire condition, alignment, fuselage skin condition.
L Right flap and hinges: visual inspection.
M Right aileron, trim tab and hinges: visual inspection, check free of play, friction; Right side tank vent: check for obstructions.
N Right leading edge and wing skin: visual inspection.
O Right fuel filler cap: check visually for desired fuel level. Drain the right fuel tank by the drainage valve using a cup to collect fuel. Drainage operation must be carried out with the aircraft parked on a level surface. Check for water or other contaminants. Close filler cap.
P Set the fuel selector valve to OFF. Drain circuit using a cup to collect fuel by opening the specific drainage valve (part of the gascolator). Check for water or other contaminants.
Q Nose wheel strut and tire: check inflation, tire and rubber shock absorber discs condition.
R Propeller and spinner condition: check for nicks, cracks, dents and other defects, propeller should rotate freely. Check fixing and lack of play between blades and hub.
S Open engine cowling:

1. Check no foreign objects are present.
2. Verify coolant level in the overflow bottle: level must be between min. and max. mark. Replenish if required.
3. *Only before the first flight of the day:*
***a**. Verify coolant level in the expansion tank, replenish as required up to top (level must be at least 2/3 of the expansion tank).*
***b**. 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.*
***c**. Carburettors: check the throttle cable condition and installation.*
***d**. Exhaust: inspect for damages, leakage and general condition*
4. Check radiators. There should be no indication of leakage of fluid and they have to be free of obstructions.
5. Check oil level and replenish as required. Prior to oil check, having magnetos switched off turn the propeller by hand in direction of engine rotation several times to pump oil from the engine into the oil tank, or let the engine idle for 1 minute. 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.
6. Inspect fuel circuit for leakages.
7. Check integrity of silent-block suspensions.
8. Check connection and integrity of air intake system, visually inspect that ram air intake is unobstructed.
9. Check that all parts are secured or safetied.

T Close engine cowling, check for proper alignment of cam-locks.
U Visual inspection of the Landing and Strobe Light.
V Remove tow bar and chocks, stow on board pitot, static ports and stall warning protective covers.

Avoid blowing inside Pitot-tube and inside airspeed indicator system's static vents as this may damage instruments.
During winter operation, remove snow and ice from the surface of the aircraft.

2.2 COCKPIT INSPECTIONS

1. Seat position and safety belts adjustment.
2. Flight controls: *operate until their stop checking for movement smoothness, free of play and friction.*
3. Parking brake: *engage and brake pedal press/brake lever pull.*
4. Throttle friction: *adjust.*
5. Circuit Breakers: *check all IN.*
6 Circuit Breaker Garmin 500: GDU *OUT.*
7. Master switch: *ON, Check generator light ON and Voltage (at least10.5 V).*
8 Torch *TEST.*
9 Instrument lights *TEST.*
10 Dome light *TEST.*
11 Pitot heating system *Make sure plug is removed, set to ON, CHECK advisory light ON. After about 5 seconds, turn OFF Pitot heating system. Check Pitot if warm.*
12 Alternate static port *CHECK closed*
13 Strobe lights mode switch *NORM*
14 Strobe lights switch *ON, check wing and vertical fin strobe lights ON*
15 Strobe lights mode switch *EMER, check wing strobe lights OFF, check vertical fin strobe ON*
16 Strobe lights mode switch *NORM*
17 Strobe lights switch *OFF*
18 Landing light *TEST*
19 Electric fuel pump: *ON, (check for audible pump noise and fuel pressure build up)*
20 Electric fuel pump: *OFF*
21 Avionic Master switch *ON, instruments check, then set in OFF position*
22 Flap control: *cycle fully extended and then set T/O*
23 Pitch Trim: *cycle fully up and down, from both left and right controls, check for trim disconnect switch operation.*
24. Pitch trim: *set neutral*
Pitch trim other than in neutral position would affect take off performance and take off rotation execution at the correct V_R IAS.
25. MASTER SWITCH *OFF*
26. Fuel quantity: *compare the fuel televels read with fuel quantity visually checked into the tanks (see Pre-flight inspection – External inspection) In absence of RH seat occupant: fasten seat belts around the seat so as to prevent any interference with the airplane flight control operation and with rapid egress in an emergency.*
27. Canopy: *Closed and locked*
Avionic Master switch must be set OFF during the engine's start-up to prevent avionic equipment damage.

2.3 ENGINE STARTING

1. Master switch ON.
2. Engine throttle: *idle*
3. Choke: *as needed*
4. Fuel selector valve: *select the tank with less fuel*

5. Electric fuel pump: *call for CLEAR and visually check*
Check to insure no person or object is present in the area close to the propeller. Forward lower sector visibility is not possible from inside the cockpit.
6. Magnetos: *BOTH*

Standard call out > *PROP CLEAR*<

7. Magnetos: *START*
9. Check oil pressure rise within 10 sec. (maximum cold value 7 bar)
10. Generator switch *"ON"*
11. Ammeter check *"green".*
12. Voltmeter: *check more than 14V*
13. Engine instruments: *Check*
14. Choke: *OFF*
15. Propeller rpm: *1000-1200 rpm*
16. Electric fuel pump: *OFF*
17. Check fuel pressure *(min 2.2 psi)*
18. Circuit Breaker Garmin 500GDU *IN*
19 Radio and Avionics: *ON*

2.4 BEFORE TAXIING

1. Altimeter: *SET*
2 Transponder *STAND BY*
3. Direction indicator: *set in accordance with the magnetic compass*
4. Parking brake: *OFF*
5 Taxi Light: *ON*

Standard call out >*LEFT FREE, RIGHT FREE*<

2.5 TAXIING

Standard call out >*CHECK BRAKES*<

1. Brakes: *check*
2. Steering: *check*
3. Flight instruments: *check altimeter and variometer, artificial horizon alignement and turn indicator coherent with steering direction, balanceball free into the opposite direction.*

2.6 PRIOR TO TAKEOFF / RUN UP

1. Brake: *SET pedal press*
2. Engine instruments: *Check within limits*
Oil pressure: 2-5 bar *(above 1400 rpm)*; 0.8 bar *(below 1400 rpm)*
3. Generator light: *OFF (check)*
4. Electric Fuel pump: *ON*
5. Fuel valve: *select the fullest tank*
6. Fuel pressure: *check*
7. Propeller speed: *advance throttle to 1640 rpm*
a. Ignition magnetos test: *select LEFT, check speed drop within 130 propeller rpm;*
b. Select BOTH: *check propeller speed 1640 rpm;*
c. Select RIGHT: *check speed drop within 130 propeller rpm,*
d. *Maximum difference of speed between LEFT and RIGHT 50 rpm,*

e. Select BOTH: *check propeller speed 1640 rpm .*

8. Carburettor heat test:

a. *Pull selector fully out*

b. *Propeller speed:* *check 100 rpm drop*

c. *Push selector* *fully IN*

d. *propeller speed:* *check 1640 rpm*

9. Flaps: *set T/O (15°)*

10. Pitch trim: *check neutral*

11. Flight controls: *check free*

12. Seat belts: *checked fastened*

13. Canopy: *check closed and locked on three points*

Standard call out >*TAKE-OFF BRIEFING*<

2.7 LINE-UP

Standard call out >*APPROACH SECTOR FREE*<

1 Parking Brake *RELEASE, check full in*

2 Annunciator window *CHECK cautions and warnings OFF*

3 Fuel Selector *RIGHT/LEFT*

4 Pitot heat *as required*

5 XPDR *SET ALT*

6 AHRS *CROSS CHECK*

7 Strobe ON

Standard call out >*RUNWAY IDENTIFIED*<

2.8 TAKEOFF

On uncontrolled fields, before line up, check runway wind direction and speed and check for traffic on final

1 Carburetor heat: *OFF*

2 Landing Light: *ON*

3 Check magnetic compass and gyro direction indicator alignment

4 Full throttle set: *check approximately **2100 ± 100** propeller rpm*

Standard call out >*T/O POWER SET*>

5 Engine instruments: *check*

Standard call out > *CHECKED*<

>*BRAKES RELEASED*<

>*SPEED RISING*<

6 Rotation speed V_R: **42**

Standard call out >*ROTATION*<

>*POSITIVE CLIMB*<

>*SAFE ALTITUDE*<

7 Flaps: *UP at safe altitude retract*

8 Electric fuel pump: *OFF*

9 Landing Light: *OFF*

10 Fuel pressure: *check green arc*

11 Propeller speed: *reduce 50 rpm*

Standard call out >*AFTER T/O CHECKLIST COMPLITED*<

2.9 CLIMB

1. Set power *at or below maximum continuous*
2. Check engine instruments within limits
3. Carburettor heat as needed,

Monitor and manually compensate asymmetrical fuel consumption by switching fuel selector valve. Switch on the electric fuel pump prior to swap the fuel feeding from one tank to another.

2.10 BEFORE LANDING

Standard call out >*APPROACH BRIEFING*<

1. Electric fuel pump: *ON*
2. Fuel valve: *select the fullest tank*
3. Landing Light: *ON*
4. On base leg *Flaps: set T/O (15°)* ***66***
On final leg: *Flaps: set Land (40°)* ***55***
6. Carburettor heat: *OFF (full IN)* as needed,
7. Optimal touchdown speed: ***51** KIAS*

Standard call out >*BEFORE LANDING CHECKLIST COMPLETED*<

2.11 FINAL

1. Flaps *check 0/TO/FULL*
2. Landing Light: *check ON*
3. Fuel pump *check ON*
3 Carburettor heat: as needed

Standard call out >*FINAL CHECK*<

2.12 BALKED LANDING/MISSED APPROACH

Standard call out>GO-AROUND<

1. Throttle: *Full*
2. Carburettor heat: *OFF*
3. Speed: keep over *61 KIAS*, climb to V_Y or V_X as applicable
4. Flaps position: *T/O*
5. Electric fuel pump: *ON*

2.13 AFTER LANDING

1. Flaps: *UP*
2. Electric Fuel Pump*:* *OFF*
3. Landing light: *OFF*
4 Taxi light: *ON*

Standard call out >*RUNWAY VACATED*<

5 Transponder *Stand by*
6 Strobe *OFF*

2.14 PARKING/SHUT DOWN

1. Parking brake: *ENGAGE*
2. Keep engine running at 1000 rpm for about one minute in order to reduce latent heat.
3. Avionic equipment: *OFF*
4 Circuit Breaker Garmin 500: GDU *OFF*
5. Magnetos: *OFF, keys extracted*
6. Master & Generator switches: *OFF*
7. Fuel selector valve: *OFF*

2.15 POSTFLIGHT CHECKS

1. Safety belts: connected to hard points, check condition
2. Magnetos: OFF, keys extracted
3. Master switch: OFF
4. Visual inspection is defined as follows: check for defects, cracks, detachments, excessive play, unsafe or improper installation as well as for general condition. For control surfaces, visual inspection also involves additional check for freedom of movement and security. Red lubber lines on bolts and nuts shall be intact.
5. Use protection plug on the Pitot tube and the static ports mounted on left wing
6. Use protection plug on the Pitot tube and the static ports mounted on left wing
7. Left aileron, trim tab and hinges: visual inspection, check free of play, friction; Left tank vent: check for obstructions.
8. Left flap and hinges: visual inspection
9. Left main landing gear: check inflation, tire condition, alignment, fuselage skin condition
10. Horizontal tail and tab: visual inspection, check free of play, friction.
11. Vertical tail, rudder and trim tab: visual inspection, check free of play, friction.
12. Right main landing gear; check inflation, tire condition, alignment, fuselage skin condition.
13. Right flap and hinges: visual inspection.
14. Right aileron, trim tab and hinges: visual inspection, check free of play, friction; Right side tank vent: check for obstructions.
15. Right leading edge and wing skin: visual inspection.
16. Nose wheel strut and tire: check inflation, tire and rubber shock absorber discs condition.
17. Propeller and spinner condition: check for nicks, cracks, dents and Rother defects, propeller should rotate freely. Check fixing and lack of play between blades and hub.
18. Open engine cowling:
    1. Check no foreign objects are present.
    4. Check radiators. There should be no indication of leakage of fluid and they have to be free of obstructions.
    6. Inspect fuel circuit for leakages.
    7. Check integrity of silent-block suspensions.
    8. Check connection and integrity of air intake system, visually inspect that ram air intake is unobstructed.
    9. Check that all parts are secured or safetied.
19. Close engine cowling, check for proper alignment of cam-locks.
20. Visual inspection of the landing and strobe light.
21. Use chocks, stall warning protective covers.

2.16 VFR NIGHT EQUIPMENT

In order to allow flight in VFR Night conditions, the airplane is fitted with additional equipment, herein described.

2.16.1 INSTRUMENTS LIGHTS

A couple of instrument lights (LED type) is connected to the main bus through a circuit breaker and installed in correspondence of fixed part of the canopy, one for each side. Fitted with flexible struts, they can be adapted to illuminate the instruments panel, as per pilot needs. A dimmer device, located next to the annunciator panel, allows for regulating instruments lights brightness.

2.16.2 DOME LIGHT

In event of electrical failures, the dome light, installed on the cabin ceiling and directly connected to the battery through a circuit breaker, provides the pilot with an additional mean to illuminate the cabin and the instruments panel.

2.16.3 TORCH

An emergency torch is provided in the cabin.

2.16.4 ANNUNCIATOR PANEL

Instruments panel features an annunciator panel consisting of three lights, namely:

ALT warning light: it indicates that the alternator is **OFF** or not working properly
PITOT HEAT advisory light: it indicates that Pitot heating system is **ON**
FUEL PUMP advisory light: it indicates that the electrical fuel pump is **ON**

The „VFR day/night" switch allows for regulating annunciator panel brightness, depending upon light conditions; it is located next to the annunciator panel itself and it permits two brightness set-ups (day and night).

2.16.5 STROBE LIGHTS MODE SWITCH

Strobe lights (located on the wings and on the vertical fin) are activated by means of a switch located on the instruments panel, RH lower side.

The strobe lights mode switch, instead, allows for selecting two operational modes:

NORM: all strobe lights are **ON**
EMER: only the strobe light on the vertical fin is **ON**
The switch allows for reducing electrical loads in event of electrical system failures.

2.16.6 LANDING LIGHT

Landing light is located under the engine nacelle, instead of the left wing leading edge, in order to prevent pilot blinding during night operations.

2.16.7 PITOT HEATING SYSTEM

The airplane airspeed indicating system is connected to a heated Pitot tube; heating system is activated by means of a switch which activates the advisory light (PITOT HEAT) on the annunciator panel.

The advisory light informs the pilot that the system is activated but it does not indicate whether it works properly.

3 EMERGENCY PROCEDURES

Section includes checklists and detailed procedures to be used in the event of emergencies. Emergencies caused by a malfunction of the aircraft or engine are extremely rare if appropriate maintenance and pre-flight inspections are carried out.
Before operating the aircraft, the pilot should become thoroughly familiar with the present manual and, in particular, with the present section. Further, a continued and appropriate training should and self study should be done.
In case of emergency the pilot should acts as follows:

1. *Keep control of the aeroplane.*
2. *Analyse the situation*
3. *Apply the pertinent procedure*
4. *Inform the Air Traffic Control if time and conditions allow.*

*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.*

3.1 AIRPLANE ALERTS

3.1.1 ELECTRIC POWER SYSTEM MALFUNCTION

GENERATOR WARNING LIGHT

*Generator warning light **ALT** may illuminate for a faulty alternator or when voltage is above 16V; in this case the over-voltage sensor automatically shuts down the alternator.*

1. Generator switch and master switch: *OFF*
2. Generator switch and master switch: *ON*

If generator warning light ALT stays displayed

1. Generator switch: *OFF*
2. Non essential electric equipments: *OFF*
3. Strobe lights mode switch: *Set to EMER*
4. Radio calls: *Reduce at the strictly necessary*
5. Five minutes before landing: *Pitot heat OFF*
6. Limit the *landing light* use

The battery is able to supply the electrical system for at least 30 minutes to complete flight in emergency conditions, with normal flight electric-loads including operation of flap and trim.

3.1.2 INSTRUMENTS LIGHTS FAILURE

1. Dome **light:** *ON*

3.1.3 STATIC PORT FAILURE

In case of static port failure, the alternate static port in the cabin (pedestal, right side) must be activated.

1. Cabin ventilation *OFF (hot and cold air)*
2. Alternate static port *OPEN*
3. Continue the mission

3.1.4 ELECTRICAL FUEL PUMP FAILURE

If the electrical fuel pump light is *OFF* the reasons can be:

1. *Electrical fuel pump not electrically fed*
2. *Light inoperative*

1. Electrical fuel pump switch: *OFF*
2. Electrical fuel pump switch: *ON*
3. Fuel pressure: *CHECK raise*

If fuel pressure doesn't build up:

1. Land as soon as possible monitoring fuel pressure.

3.1.5 TRIM SYSTEM FAILURE

Locked Control
Should trim control be inoperative, act as follows:

1. Breakers: *CHECK*
2. Trim switch LH/RH: *CHECK for correct position*
3. Speed: *adjust to control aircraft without excessive stick force*
4. Land aircraft as soon as possible.

Runaway
In event of trim runaway, act as follows:

1. Trim disconnect switch: *OFF*
2. Speed: *adjust to control aircraft without excessive stick force*
3. Land aircraft as soon as possible.

3.2 ENGINE FAILURE

3.2.1 ENGINE SECURING

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

1. Throttle Lever *IDLE*
2. Magnetos *OFF*
3. Fuel Selector *OFF*
4. Electrical fuel pump *OFF*
5. Generator switch *OFF*

3.2.2 ENGINE FAILURE DURING TAKE-OFF RUN

1. Throttle: *IDLE (fully out)*
2. Rudder *Keep heading control*
3. Brakes: *apply as needed*

When safely stopped:

4. Magnetos: *OFF.*
5. Fuel selector valve: *OFF*
6. Electric fuel pump*:* *OFF*
7. Generator & Master switches: *OFF*

3.2.3 ENGINE FAILURE IMMEDIATELY AFTER TAKE-OFF

1. Speed: *keep minimum **51** kias*
2. Find a suitable place to land safely.
The immediate landing should be planned straight ahead with only small changes in directions not exceeding 45° to the left and 45° to the right.
3. Flaps: *as needed.*
Stall speed increases with bank angle and longitudinal load factor. Acoustic stall warning will in any case provide a correct anticipated clue of incipient stall. At, or right before touch down
4. Throttle: *IDLE (fully out)*
5. Magnetos: *OFF.*
6. Fuel selector valve: *OFF*
7. Electric fuel pump: *OFF*
8. Generator & Master switches: *OFF*

A single engine aircraft take off should always be preceded by a thorough take off emergency pilot self-briefing. Decision to try an engine emergency restart right after take off should be taken only if environmental situation requires it: pilot shall never ignore the priority of attentively follow an immediate emergency landing.
After possible mechanical engine seizure, fire or a major propeller damage, engine restart attempt is not recommended.

3.3 ENGINE FAILURES DURING FLIGHT

3.3.1 LOW FUEL PRESSURE

If the fuel pressure indicator falls below the 2.2 psi*(0.15 bar)*:
1. Electric fuel pump: *ON*
2. Fuel selector valve: *change the fuel feeding tank*
3. Check both fuel quantity indicators
If fuel pressure doesn't build up:
4. Land as soon as possible monitoring fuel pressure.
If engine stops:
5. Land as soon as possible applying forced landing procedure

3.3.2 OIL PRESSURE LIMITS EXCEEDANCE

If oil pressure exceeds upper limit (7 bar):
1. Throttle Lever *REDUCE engine power as practical*
2. OIL PRESS and OIL TEMP *CHECK within limits*
3. Land as soon as practical
If oil pressure is under the lower limit (0.8 bar):
1. Throttle Lever *REDUCE Minimum practical*
2. Land as soon as practical
If oil pressure continues to decrease:
3. Land as soon as possible applying forced landing procedure

3.3.3 HIGH OIL TEMPERATURE

If oil pressure is low see Low Oil Pressure.
If oil pressure is within limits:
1. Throttle Lever *REDUCE Minimum practical*
If oil temperature does not decrease
2. Airspeed *INCREASE*

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

3. Land as soon as practical

If engine roughness, vibrations, erratic behavior, or high CHT /CT is detected:

4. Land as soon as possible applying forced landing procedure

3.3.4 CHT/CT LIMIT EXCEEDANCE

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

1. Throttle Lever *REDUCE Minimum practical*

2. Land as soon as practical

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

3. Land as soon as possible applying forced landing procedure

3.4 IN-FLIGHT ENGINE RESTART

After a mechanical engine seizure, fire or a major propeller damage engine restart is not recommended. It is preferred to restart the engine at an altitude below 4000ft and at the suggested speed of 69 KIAS or more

1. Carburettor heat	*ON if required*
2. Electrical fuel pump	*ON*
3. Fuel quantity indicator	*CHECK*
4. Fuel Selector	*change the fuel feeding tank*
5. Magnetos	*BOTH*
6. Magnetos	*START*
7. Throttle lever	*SET as required*

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

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.

After starter engagement during in-flight engine restart, GNS 430 (or the alternative equipment GNS 530) indication may be temporarily lost. Recovery can last up to 1 minute.

In case of unsuccessful engine restart:

1. Engine	*SECURE*

2. Land as soon as possible applying forced landing procedure

3.5 SMOKE AND FIRE

3.5.1 ENGINE FIRE ON THE GROUND

1. Fuel Selector	*OFF*
2. Electrical fuel pump	*OFF*
3. Magnetos	*OFF*
4. Throttle lever	*FULL POWER*
5. Cabin Heat	*OFF*
6. Generator & Master Switches	*OFF*
7. Parking Brake	*ENGAGED*
8. Aircraft Evacuation	*carry out immediately*

3.5.2 ENGINE FIRE DURING TAKEOFF

Before rotation: abort take off

1. Throttle Lever — *IDLE*
2. Rudder — *Keep heading control*
3. Brakes — *As required*

With aircraft under control

1. Fuel Selector — *OFF*
2. Electrical fuel pump — *OFF*
3. Magnetos — *OFF*
4. Cabin Heat — *OFF*
5. Generator & Master Switches — *OFF*
6. Parking Brake — *ENGAGED*
7. Aircraft Evacuation — *carry out immediately*

3.5.3 ENGINE FIRE IN-FLIGHT

1. Cabin heating: — *OFF*
2. Fuel selector valve: — *OFF*
3. Electric fuel pump: — *OFF*
4. Throttle: — *FULL FORWARD until the engine stops*
5. Magnetos: — *OFF*
6. Cabin vents: — *OPEN*

Do not attempt engine restart

7. Land as soon as possible applying forced landing procedure

3.5.4 CABIN FIRE / ELECTRICAL SMOKE IN CABIN DURING FLIGHT

1. Cabin heating: — *OFF*
2. Cabin vents: — *OPEN*
3. Canopy: — *OPEN, if necessary*
4. Try to choke the fire. Direct the fire extinguisher towards flame base

If smoke persists:

1. Generator & Master switches: — *OFF*
2. Land as soon as possible and evacuate the aircraft

If the MASTER SWITCH is set to OFF, consider that flaps extension and pitch trim operation would be not possible

3.5.5 ELECTRICAL SMOKE/FIRE IN CABIN ON THE GROUND

1. Generator Switch: — *OFF*
2. Throttle Lever: — *IDLE*
3. Magnetos: — *ALL OFF*
4. Fuel Selector Valve: — *OFF*
5. MASTER SWITCH: — *OFF*
6. Aircraft Evacuation — *carry out immediately*

3.6 LANDING EMERGENCY

3.6.1 FORCED LANDING WITHOUT ENGINE POWER

1. Flap: *UP*
2. Airspeed: *69 KIAS*
3. Find a suitable place to land safely, plan to approach it upwind.
4. Fuel selector valve: *OFF*
5. Electric fuel pump: *OFF*
6. Magnetos: *OFF*
7. Safety belts: *Tighten*
8. Canopy locks: *CHECK LOCKED*
When certain to land
9. Flaps: *as necessary*
10. Generator and Master switches: *OFF*.
*Glide ratio is **12.8** therefore in zero wind conditions every 1000ft Above Ground Level it is possible to cover ca. 2 NM(ca. 4 km).*

3.6.2 POWER-ON FORCED LANDING

1. Airspeed: *69 KIAS*
2. Flaps: *UP*
3. Locate the most suitable terrain for emergency landing, plan to approach it upwind.
4. Safety belts: *Tighten*
5. Canopy locks: *CHECK LOCKED*
When certain to land, right before touch down
6. Flaps: *as necessary*
7. Fuel selector valve: *OFF*
8. Electric fuel pump: *OFF*
9. Magnetos: *OFF*
10. Generator and Master switches: *OFF*

3.6.3 LANDING WITH A FLAT NOSE TIRE

1. Pre-landing checklist: *Complete*
2. Flaps: *Land*
3. Land and maintain aircraft *NOSE HIGH* attitude as long as possible.
As aircraft stops
4. Engine securing: *Perform*
5. Airplane evacuation: *Perform*

3.6.4 LANDING WITH A FLAT MAIN TIRE

If it's suspected a main tire defect or it's reported to be defective:
1. Pre-landing checklist: *Complete*
2. Flaps: *Land*
3. Land the aeroplane on the side of runway opposite to the defective tire to compensate the change in direction which is to be expected during final rolling
4. Touchdown with the GOOD TIRE FIRST and hold aircraft with the flat tire off the ground as long as possible by mean of aileron and rudder control.
As aircraft stops

5. Engine securing: *Perform*
6. Airplane evacuation: *Perform*

3.7 AIRPLANE EVACUATION

With the engine secured and propeller stopped (if practical):

1. Parking brake: *ON*
2. Seat belts: *unstrap completely*
3. Headphones: *REMOVE*
4. Canopy: *OPEN*
5. If canopy is locked or doesn't slide: *break using the hammer*
6. *Escape away from flames/ hot engine compartment/ spilling fuel tanks.*

3.8 RECOVERY FROM UNINTENTIONAL SPIN

If unintentional spin occurs, the following recovery procedure should be used:

1. Throttle: *IDLE (full out position)*
2. Rudder: *full, in the opposite direction of the spin*
3. Stick: *centralize and hold neutral*

As the spin stops:

4. Rudder: *SET NEUTRAL*
5. Aeroplane attitude: *smoothly recover averting speeds in excess of VNE and maximum load factor (n=+3.8)*
6. Throttle: *Readjust to restore engine power.*
Keep full rudder against rotation until spin has stopped.
One complete turn and recovery takes around 500 feet.

3.9 UNINTENTIONAL FLIGHT INTO ICING CONDITIONS

Carburettor ice is possible when flying at low engine rpm in visible moisture (outside visibility less than 5 km, vicinity of fog, mist, clouds, rain, snow or hail) and OAT less than 10°C. Airbox carburetor heater is designed to help prevent carburettor ice, less effectively functions as a de-icing system.

1. Carburettor heating: *ON*
2 Pitot heat: *ON*
3. Immediately fly away from icing conditions (changing altitude and direction of flight, out of clouds, visible moisture, precipitations)
4. Controls surfaces: *continue to move to maintain their movability*
5 Propeller speed: *increase rpm.*
6. Cabin heat: *ON*

In case of ice formation on wing leading edge, stall speed would increase.

3.10 G500 SYSTEM FAILURES

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.

In most of cases, the red "X" annunciation is accompanied by an Alert Message. Refer to G500 Pilot's Guide (P/N 190-01102-02), last issue, Chapter 6, Annunciations and Alerts list.

Loss Of Airspeed Information

If the display system is not receiving airspeed input from the Air Data Computer, a red X is displayed on the field.

INSTRUCTION: *refer to standby analogical airspeed indicator*

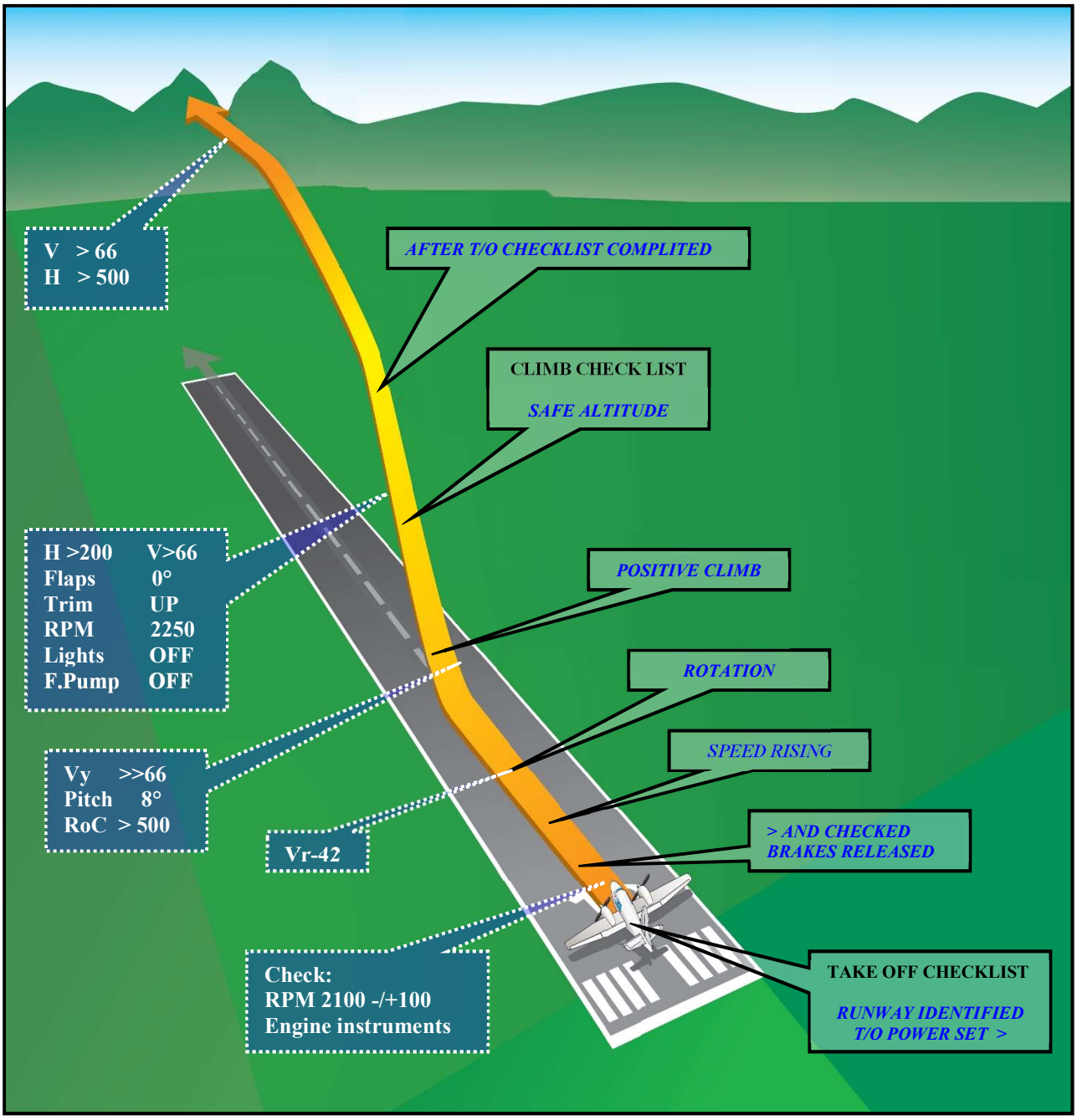
Loss Of Altitude Information

If the display system is not receiving altitude input from the Air Data Computer, a red X is displayed on the field.

INSTRUCTION: *refer to standby analogical altitude indicator*

4 TRAFFIC PATTERN PROCEDURES

4.1 DEPARTURE



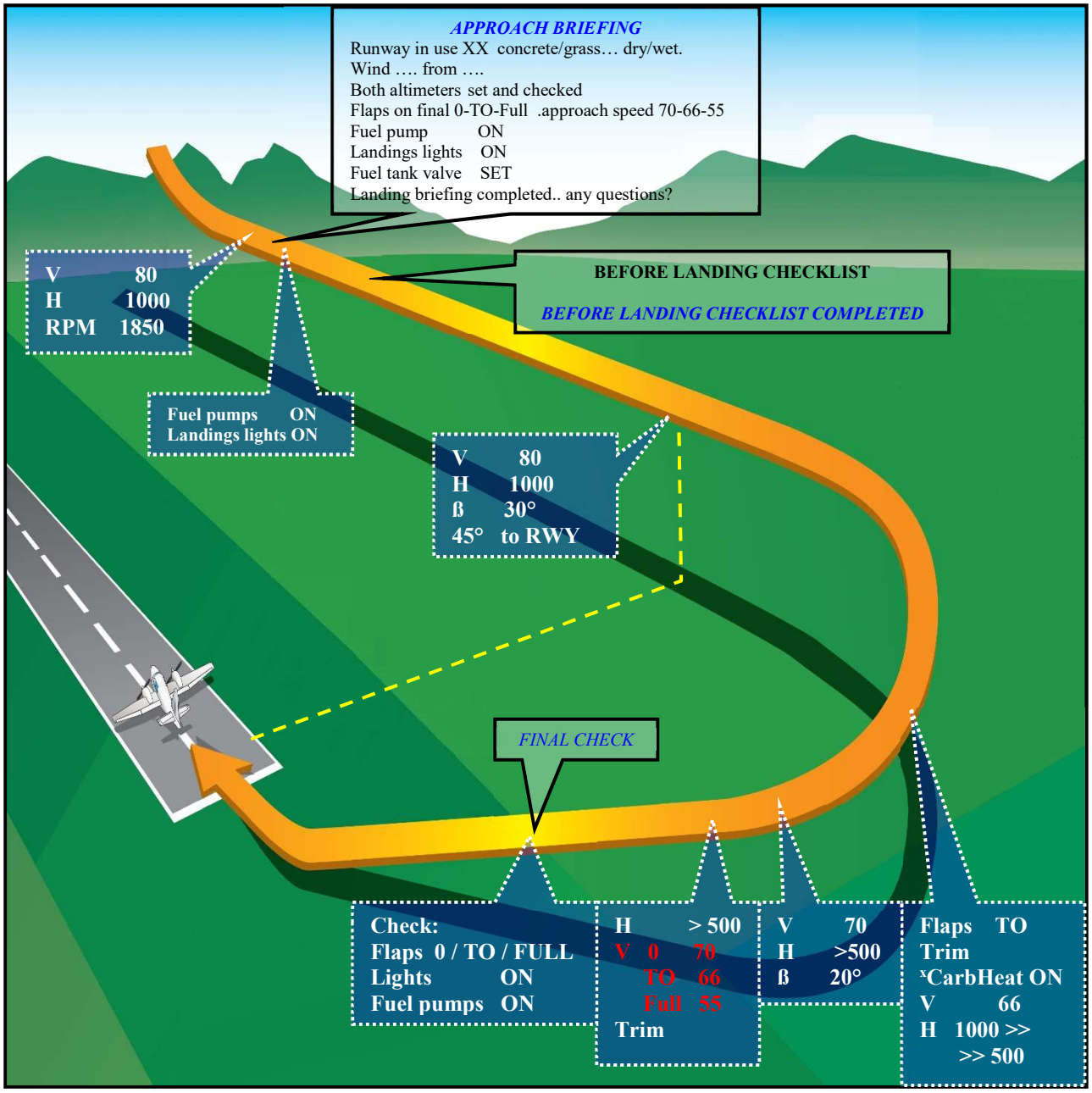
4.1.1 TAKE-OFF BRIEFING:

I'm the pilot flying, you are the pilot in command.
Runway in use ….. concrete/grass… dry/wet.
Wind …. from ….
Flaps TO -Vr 42 climb speed Vy 66
After departure …. left hand pattern climb …..
Emergency briefing
Any failure before Vr…abort take-off, breaks apply, vacate runway notify ATC.
Any failure after Vr .. and sufficient runway ahead land vacate runway notify ATC.
Any failure to 500 feets land ahead notify ATC
Any failure over 500 feets turning to runway notify ATC
In case of engine fire apply emergency checklist and land asap
Briefing completed any questions?

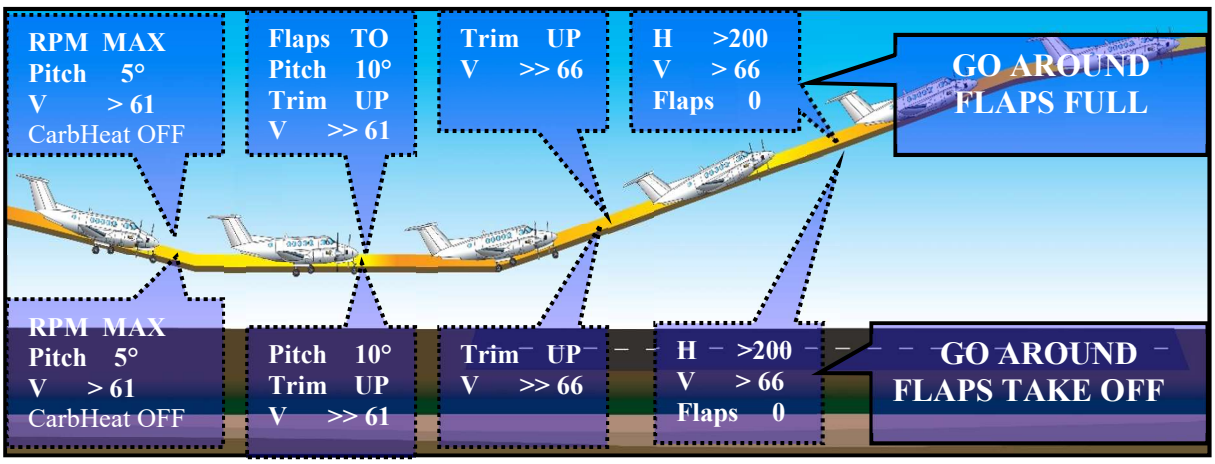
4.2 LANDING

4.2.1 APPROACH BRIEFING

Runway in use XX concrete/grass… dry/wet.
Wind …. from ….
Both altimeters set and checked
Flaps on final 0-TO-Full approach speed 70-66-55
Fuel pump ON
Fuel tank valve SET
Landings lights ON
Landing briefing completed… any questions?

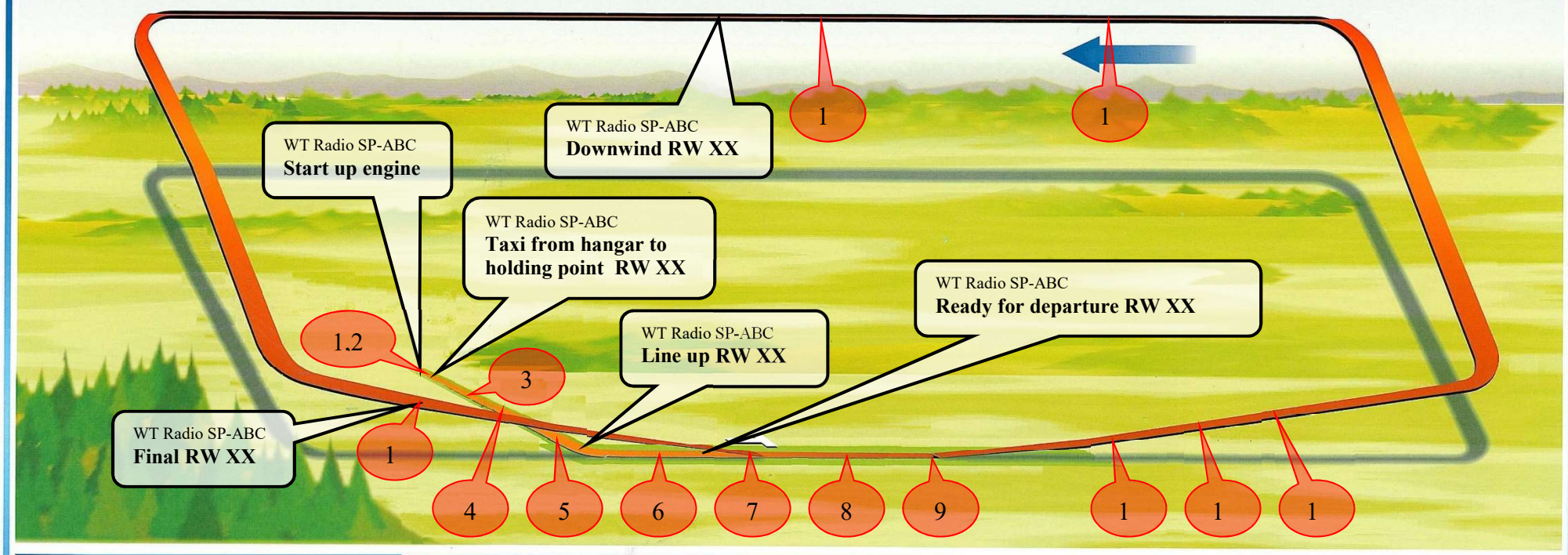

APPROACH BRIEFING
Runway in use XX concrete/grass… dry/wet.
Wind …. from ….
Both altimeters set and checked
Flaps on final 0-TO-Full .approach speed 70-66-55
Fuel pump ON
Landings lights ON
Fuel tank valve SET
Landing briefing completed.. any questions?
V 80
H 1000
RPM 1850
BEFORE LANDING CHECKLIST
BEFORE LANDING CHECKLIST COMPLETED
Fuel pumps ON
Landings lights ON
V 80
H 1000
ß 30°
45° to RWY
FINAL CHECK
Check:
Flaps 0 / TO / FULL
Lights ON
Fuel pumps ON
H > 500
V 0 70
TO 66
Full 55
Trim
V 70
H >500
ß 20°
Flaps TO
Trim
xCarbHeat ON
V 66
H 1000 >>
>> 500

4.3 GO AROUND


RPM MAX
Pitch 5°
V > 61
CarbHeat OFF
Flaps TO
Pitch 10°
Trim UP
V >> 61
Trim UP
V >> 66
H >200
V > 66
Flaps 0
GO AROUND
FLAPS FULL
RPM MAX
Pitch 5°
V > 61
CarbHeat OFF
Pitch 10°
Trim UP
V >> 61
Trim UP
V >> 66
H >200
V > 66
Flaps 0
GO AROUND
FLAPS TAKE OFF

TECNAM P2002 COCKPIT LAYOUT

TRAFFIC CIRCUIT STANDARD CALL OUT



ENGINE STARTING
1 *PROP CLEAR*

TAXIING
2 *LEFT FREE, RIGHT FREE*
3 *CHECK BRAKES*

PRIOR TO TAKEOFF
4 *TAKE-OFF BRIEFING*

LINE-UP
5 *APPROACH SECTOR FREE*
6 *RUNWAY IDENTIFIED*

TAKEOFF
7 *T/O POWER SET*
CHECKED
BRAKES RELEASED
8 *SPEED RISING*
9 *ROTATION*
10 *POSITIVE CLIMB*

CLIMB
11 *SAFE ALTITUDE*
12 *AFTER T/O CHECKLIST COMPLITED*

BEFORE LANDING
13 *APPROACH BRIEFING*
14 *BEFORE LANDING CHECKLIST COMPLETED*

FINAL
15 *FINAL CHECK*

AFTER LANDING
16 *RUNWAY VACATED*