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PILOT'S OPERATING HANDBOOK

AND

FLIGHT TRAINING SUPPLEMENT

AIRCRAFT MODEL: PIONEER 300

AIRCRAFT TYPE: P300 KITE

#5021

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DATE OF ISSUE OF LAST REV. **01 JUNE 2015**

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This Manual is made by 111 pages (including the annexes), original and amended pages are herein listed:

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REV.2	19-06-2013	Added Chapter 9 (Supplements)
REV.3	30-11-2013	Revision/updated of Annexes FTS
REV.4	14-07-2014	Revision/updated of Format and text mistakes
REV.5	01-06-2015	Revision/updated of Format and text mistakes

DETAILS OF REVISIONS					
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CAUTION

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GLOSSARY

AOD	Aft of Datum
ASI	Air Speed Indicator
ASTM	American Standard for Testing & Materials
BHP	Brake Horse Power
CG	Center of Gravity
CHT	Cylinder Head Temperature
FTS	Flight Training Supplement
IAS	Indicated Air Speed
KCAS	Calibrated Air Speed in Knots
KIAS	Indicated Air Speed in Knots
KTAS	Calibrated True Air Speed
POH	Pilot Operating Handbook
LE	Leading Edge
MAC	Mean Aerodynamic Chord
MAUW	Maximum All UP Weight
MTOW	Maximum Takeoff Weight
OAT	Outside Air Temperature
OEM	Original Equipment Manufacturer
SI	International Unit System
RPM	Revolution per Minute

A. INTRODUCTION

A.1 References documents

This manual has been prepared in accordance with consensus standard ASTM F2746. The P300 KITE has been shown to comply with consensus standard ASTM F2245. The aircraft must be maintained in accordance with consensus standard ASTM F2295, Standard Practice for Continued Operational Safety Monitoring of a Light Sport Aircraft. Please note that this standard describes also the responsibilities of the Owner/Operator.

In details the following ASTM standards have been used to demonstrate compliance and therefore to prepare this document:

1) F2245-12d Standard Specification for Design and Performance of Light Sport Aircraft;
2) F2279-06 Standard Practice for Quality Assurance in the Manufacture of Fixed Wing Light Sport Aircraft;
3) F2295-06 Standard Practice for Continued Operational Safety Monitoring of a Light Sport Aircraft;
4) F2746-12 Standard Specification for Pilot's Operating Handbook (POH) for Light Sport Aircraft;
5) F2930-12 Standard Guide for Compliance with Light Sport Aircraft Standards;
6) F2483-12 Standard Practice for Maintenance and the Development of Maintenance Manuals for Light Sport Aircraft;

In addition to the above mentioned documents the following also apply:

7) PD9095-3 Rev.3 Dated 30-11-2013 (P300 KITE Line Maintenance Manual);

A.2 Original Equipment Manufacturer

The P300 KITE has been manufactured by Alpi Aviation Srl who's contact information are herein listed:

Name:	Alpi Aviation Srl;
Location:	Via dei Templari 24, 33080, San Quirino (PN), Italy
Phone N°:	+39 (0) 434 370496
Fax N°:	+39 (0) 434 360713
Email:	info@alpiaviation.com
Website:	www.alpiaviation.com

A.3 Alternative contact information

In case of certification documentation is not available to the above mentioned Company headquarters, it is also available here:

Name:	Alpi Aviation Srl;
Location:	Via Brigata Osoppo 180, 33070, Vigonovo di Fontanafredda (PN), Italy
Phone N°:	+39 (0) 434 99194
Fax N°:	+39 (0) 434 565180

A.4 POH Lifecycle Management

This POH contains the airworthiness limitations and essential operating data for this type of aircraft. This POH shall be carried in the aircraft on all flights.

The pilot in command of the aircraft shall comply with all requirements, procedures and limitations with respect to the operation of the aircraft set out in the POH for the aircraft.

It is the owner's responsibility to maintain this manual up to date, and to enter the date of incorporation and his signature on the Amendment Record Sheet.

Whenever the revision status of his manual could be in question, each owner should contact the local Alpi Aviation Dealer, or directly Alpi Aviation S.r.l. in Italy.

No entries or endorsements may be made to this POH except in the manner and by persons authorized for the purpose. In case of aircraft damage or personal injury resulting from non-observation of instructions in the manual Alpi Aviation s.r.l. denies all responsibility.

All text, design, layout and graphics are owned by Alpi Aviation s.r.l. Therefore this manual and any of its contents may not be copied or distributed in any manner (electronic, web or printed) without the prior consent of Alpi Aviation Srl s.r.l.

A.5 Document Organization

The document has been organized in sections as herein summarized:

CHAPTER 1	indicates some <u>general considerations</u> about the use of this POH
CHAPTER 2	list the <u>operating limitations</u>
CHAPTER 3	lists the <u>emergency procedures</u>
CHAPTER 4	list the normal <u>procedures</u>
CHAPTER 5	list the aircraft <u>performances</u>
CHAPTER 6	list the <u>weight & balance</u> procedure and the equipment list
CHAPTER 7	list the <u>aircraft description</u> and the related systems
CHAPTER 8	list the <u>aircraft handling</u> and servicing procedures
CHAPTER 9	list the <u>supplementary information</u> regarding the aircraft

B. WARNING, CAUTION AND NOTE

<u>WARNING</u>

MEANS THAT THE NON-OBSERVATION OF THE CORRESPONDING PROCEDURE LEADS TO AN IMMEDIATE OR IMPORTANT DEGRADATION OF THE FLIGHT SAFETY.

CAUTION

MEANS THAT THE NON-OBSERVATION OF THE CORRESPONDING PROCEDURE LEADS TO A MINOR OR TO A MORE OR LESS LONG TERM DEGRADATION OF THE FLIGHT SAFETY.

NOTE

Draws the attention of any special item not directly related to safety but which is important or unusual.

1 GENERAL INFORMATION

Every pilot has to understand the limitations and specifications of this Manual. The POH must be read thoroughly. Please pay attention to the pre-flight checks. Maintenance instructions for the aircraft are given in a separate Maintenance Manual.

For maintenance of the Rotax® engine, emergency parachute system (where/if installed) and other installed equipment refer to the OEM manuals.

Flying the P300 KITE must be always done with the possibility of a safe landing due to loss of the engine power.

P300 KITE is a VFR aircraft only. Because of cruising speed and range of P300 KITE flight into vastly different weather patterns and meteorological conditions can occur. The entry into bad weather with IFR conditions with VFR aircraft is extremely dangerous. As the owner or operator of an aircraft you are responsible for the safety of your passenger and yourself.

Do not attempt to operate the P300 KITE in any manner that would endanger the aircraft, the occupants or persons on ground.

NOTE

Be particularly scrupulous when flying over areas where a safe landing cannot be made in the event of an engine failure. If you plan to perform cross country flights, be sure to identify a sufficient number of waypoints, where you could make a safe landing.

WARNING

IT IS ASSUMED THAT, PROVIDING THE OWNER HAS NOT NOTIFIED THE MANUFACTURER USING THE FORM PROVIDED IN PARAGRAPH 9.5 OF THIS MANUAL, AND DOES NOT DO SO WITHIN 30 DAYS, DOES FULLY AGREE WITH ALL CONTENT.

1.1 *Aeronautical terms*

SUBJECT	DESCRIPTION
AIRFIELD PRESSURE ALTITUDE	The Airfield Pressure Altitude is the altimeter reading at the surface of the aerodrome with the subscale set to 29.92 Inches of mercury (1013 millibars).
INDICATED AIRSPEED	Indicated airspeed is the reading obtained from the installed airspeed indicator.
CALIBRATED AIRSPEED	Indicated airspeed corrected for pitot position and instrument error and expressed in knots. KCAS is equal to KTAS at standard atmosphere at sea level.
TAKEOFF SAFETY LIFT-OFF SPEED	The Takeoff Safety Speed is a speed chosen to ensure adequate control will exist under all conditions, including turbulence and sudden engine failure, during the climb after takeoff.

SUBJECT	DESCRIPTION
LANDING APPROACH SAFETY SPEED	The Landing Safety Speed is the speed chosen to ensure that adequate control will exist under all conditions, including turbulence, to carry out normal flare and touchdown.
NORMAL OPERATING SPEED	This speed shall not normally be exceeded. Operations above the Normal Operating Speed shall be conducted with caution and only in smooth air.
V_A = MAX. STRUCTURAL OPERATING SPEED	Maximum speed for full application of the primary flight controls.
V_O = OPERATIONAL MANEUVERING SPEED	The speed to adequately protect the structure from abrupt single control in pitch.
TRUE AIRSPEED	The airspeed expressed in knots relative to ambient air. (KCAS corrected for altitude and temperature).
V_{FE} MAX. FLAP EXTENDED SPEED	The highest speed permissible with wing flaps in the prescribed extended position.
V_{NO} MAX. STRUCTURAL CRUISING SPEED	The speed that should not be exceeded except in smooth air, and then only with caution.
V_{NE} NEVER EXCEED SPEED	The speed limit that may not be exceeded at any time.
V_S STALLING SPEED	The stall speed or minimum steady flight speed at which the aircraft is controllable in the landing configuration without flap
V_{S1} STALLING SPEED	The stall speed or minimum steady flight speed at which the aircraft is controllable in a specified configuration.
V_{SO} STALLING SPEED	The stall speed or minimum steady flight speed at which the aircraft is controllable in the landing configuration
V_X BEST ANGLE-OF-CLIMB SPEED	The speed which results in the greatest gain of altitude in a given horizontal distance.
V_Y BEST RATE-OF-CLIMB SPEED	The speed which results in the greatest gain in altitude in a given time.

Table 1: Aeronautical terms

1.2 *Meteorological terms*

SUBJECT	DESCRIPTION
OUTSIDE AIR TEMPERATURE	The ambient air temperature. It is expressed in either degrees Celsius or degrees Fahrenheit.
STANDARD TEMPERATURE	Standard Temperature is 15 degrees C (59 degrees F) at sea level pressure altitude.
PRESSURE ALTITUDE	The altitude read from an altimeter when the altimeter's barometric scale has been set to 1013 mb (29.92 inches of mercury).

Table 2: Meteorological terms

1.3 *Engine Terminology*

SUBJECT	DESCRIPTION
BRAKE HORSEPOWER	The power developed by the engine.
REVOLUTIONS PER MINUTE	Engine speed.
STATIC RPM	The engine speed attained during a full-throttle engine run up when the aircraft is on the ground and stationary.

Table 3: Engine terms

1.4 *Performance & Flight Planning Terminology*

SUBJECT	DESCRIPTION
MAXIMUM CROSSWIND SPEED	The velocity of the crosswind component for which adequate control of the aircraft during takeoff and landing was actually demonstrated during certification tests.
USABLE FUEL	The fuel available for flight planning.
UNUSABLE FUEL	The quantity of fuel that cannot be safely used in flight.

Table 4: Perf. & Flight Planning terms

1.5 *Weight and Balance Terminology*

SUBJECT	DESCRIPTION
STATION	Location along the aircraft's longitudinal axis used for cg determination. On the P300 KITE, 3 are specified: front seat station which is the center of the front seats; fuel station which is the center of the fuel tanks; baggage station which is the parcel shelf under the rear canopy.
CENTER OF GRAVITY	The point at which an aircraft, or equipment, would balance if suspended.
C.G. LIMITS	The extreme center of gravity locations within which the aircraft must be operated at a given weight.
STANDARD EMPTY WEIGHT	The weight of a standard aircraft, including unusable fuel, full operating fluids and full engine oil.
BASIC EMPTY WEIGHT	The standard empty weight plus the weight of optional equipment.
MAXIMUM ALL-UP WEIGHT	The maximum weight for which the aircraft is designed.
MEAN AERODYNAMIC CHORD	The chord of an equivalent rectangular planform wing.

Table 5: Weight & Balance terms

1.6 *Summary of performance specification*

1.6.1 Engine

DESCRIPTION	VALUE
Manufacturer	ROTAX GmbH
Engine Type	912ULS Series liquid cooled
Max Rated Power	100 Hp @ 5800 Rpm

Table 6: Engine type

1.6.2 Propeller

DESCRIPTION	VALUE
Manufacturer	DUC
Type	Three blades
Model	SWIRL INCONEL
Diameter	1730 mm (≈ 68 inch)
Pitch	Ground Adjustable

Table 7: Propeller Fixed Pitch Propeller Type

1.6.3 Fuel and fuel capacity

1.6.3.1 Approved Fuel and Fuel grades

DESCRIPTION	VALUE
UNLEADED MOGAS	91 AKI or higher – 95 RON or higher
AVGAS	100 LL or 100 grade aviation gasoline
NOTE: AVGAS 100 for short periods only!	

Table 8: Fuel type

1.6.3.2 Fuel Capacity

DESCRIPTION	VALUE
Total*	81 Litres (21.4 gal)
Usable	80 Litres (21.1 gal)
*NOTE: unusable fuel has been measured to be only 15 cc (less than 1 pint)). Fuel tank capacity is a bit greater than 80 lt (21.1 gal) and allows for refueling and use the full 80 lt (21.1 gal) tank.	

Table 9: Fuel capacity

1.6.4 Oil and Oil Capacity

1.6.4.1 Approved Oil Grades

DESCRIPTION	VALUE
Specification	API classification "SF" or "SG" (See ROTAX manual)
Motorcycle oil of a registered brand with gear additive	

Table 10: Approved oil grades

1.6.4.2 Oil Capacity

DESCRIPTION	VALUE
Oil Tank capacity:	3 Liters (0.8 gal)

Table 11: Oil capacity

1.6.5 Tire Inflation Pressures

DESCRIPTION	VALUE
Standard Mains	2.2 bar = 32.3 psi
Nose	2 bar = 29.0 psi

Table 12: Tire inflation pressure

1.6.6 Cabin and entry dimensions

DESCRIPTION	VALUE
Cabin width (at shoulder line)	1050 mm (41.4 inch)
Cabin length back (seat to rudder pedals)	1030 mm (40.6 inch)
Cabin height (lower seat to canopy)	960 mm (37.8 inch)
NOTE: See also Picture 3, Aircraft 3 Views for general purpose dimensions	

Table 13: Cabin and entry dimensions

1.6.7 Operating weights and loading

DESCRIPTION	VALUE
Min Occupant weight	40 kg (88 lb)
Max (Total) Baggage weight	20 kg (total) (44 lb)
Ballast weight	Ballast is not required nor authorized
Max Fuel weight	58 kg (128 lb)
Max Take Off Weight	**560 kg (1235 lb)**
Max Landing Weight	**560 kg (1235 lb)**

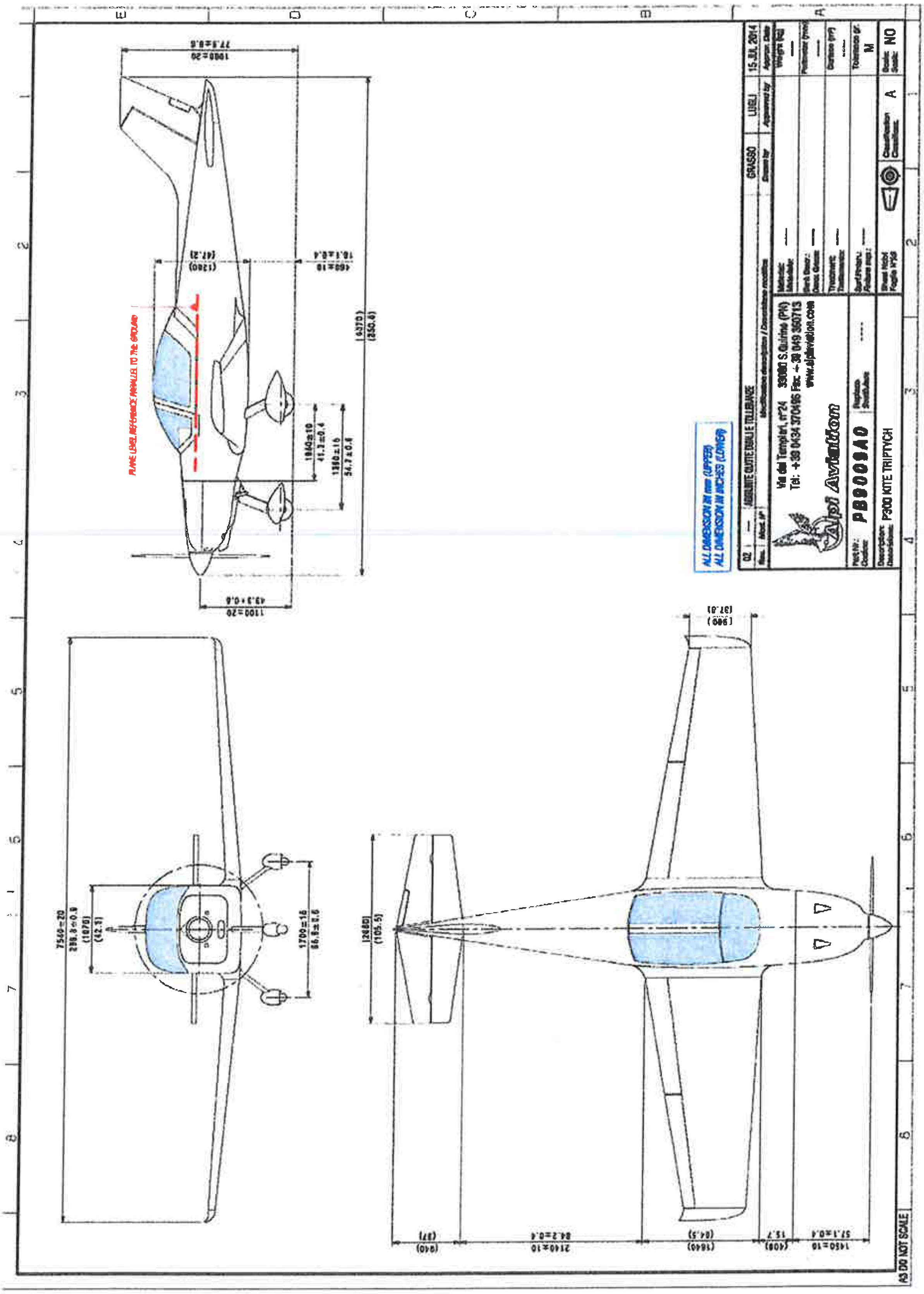
Table 14: Operating Weight

1.6.8 Operating Speeds

DESCRIPTION	VALUE
V_S	33 KIAS (engine idle)
V_{SO}	28 KIAS (engine idle)
Best angle of climb @ (V_X)	900 fpm @ sea level and 55 KIAS
Best rate of climb @ (V_Y)	1100 fpm @ sea level and 65 KIAS
V_H=V_{NO}	120 KIAS @ 5500 Rpm
Still air range	370 miles (half hour reserve) @ 120 KIAS & 5500 Rpm
Still air range	460 miles (half hour reserve) @ 105 KIAS & 4800 Rpm

Table 15: Operating speeds

1.6.9 Aircraft 3 views

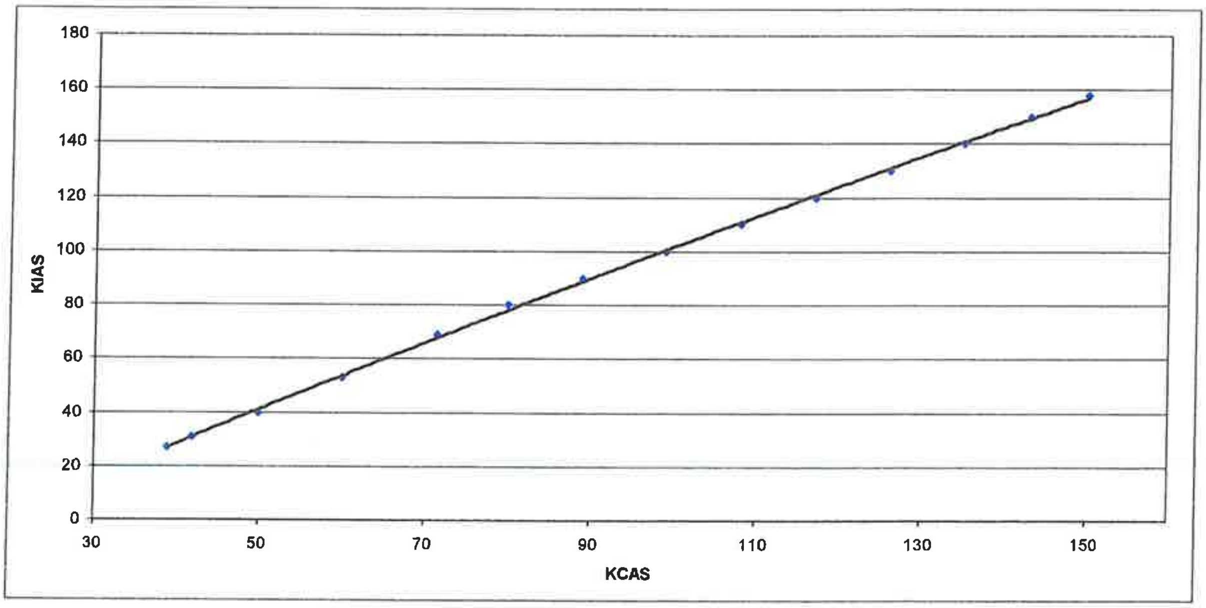


Picture 1: Aircraft 3 views (ground turning radius is 6 meters ~ 20 feet)

2 LIMITATION

This chapter includes operating limitations, instrument markings and basic placards necessary for the safe operation of the aircraft, its engine, standard systems and standard equipment.

These operating limitations must be observed. In order to simplify the POH reading and understanding, the following calibration diagram can be used in order to convert Indicated Air Speed into Calibrated Air Speed (conversion table is provided just near the ASI):



Picture 2: Calibration diagram from KIAS to KCAS

2.1 *Airspeed indicator range markings*

ASI Markings and their operational significances are shown in this table where all the speeds are assumed to be KIAS:

MARKING	RANGE KNOTS	DESCRIPTION
White Arc	V_{S0} (28) – V_{FE} (80)	Full-flap operating range. Lower limit is max. weight Vso in landing configuration. Upper limit is max. speed permissible with flaps extended.
Green Arc	V_S (33) – V_H=V_{NO} (120)	Normal operating range. Lower limit is clean stall speed. Upper limit is max operating structural speed.
Yellow Arc	V_H=V_{NO} (120) – V_{NE} (150)	Operations must be conducted with caution and only in still air.
Red Line	V_{NE} (150)	Never exceed speed

Table 16: ASI markings

2.2 *Stalling Speed at Maximum Takeoff Weight*

The P300 KITE stall characteristic is benign at all configurations, with no tendency for significant wing drop or departure. The stall speeds in the various engine on and off configurations are:

@ 75% engine			
FLAP SETTING	**Retracted**	**Stage 1 (Takeoff)**	**Stage 2 (Landing)**
Designation	V_S	V_{S1}	V_{S0}
Stall speed	**41 KCAS (30 KIAS)**	**38 KCAS (27 KIAS)**	**35 KCAS (25 KIAS)**
@ engine idle			
Designation	V_S	V_{S1}	V_{S0}
Stall speed	**45 KCAS (33 KIAS)**	**42 KCAS (30 KIAS)**	**39 KCAS (28 KIAS)**

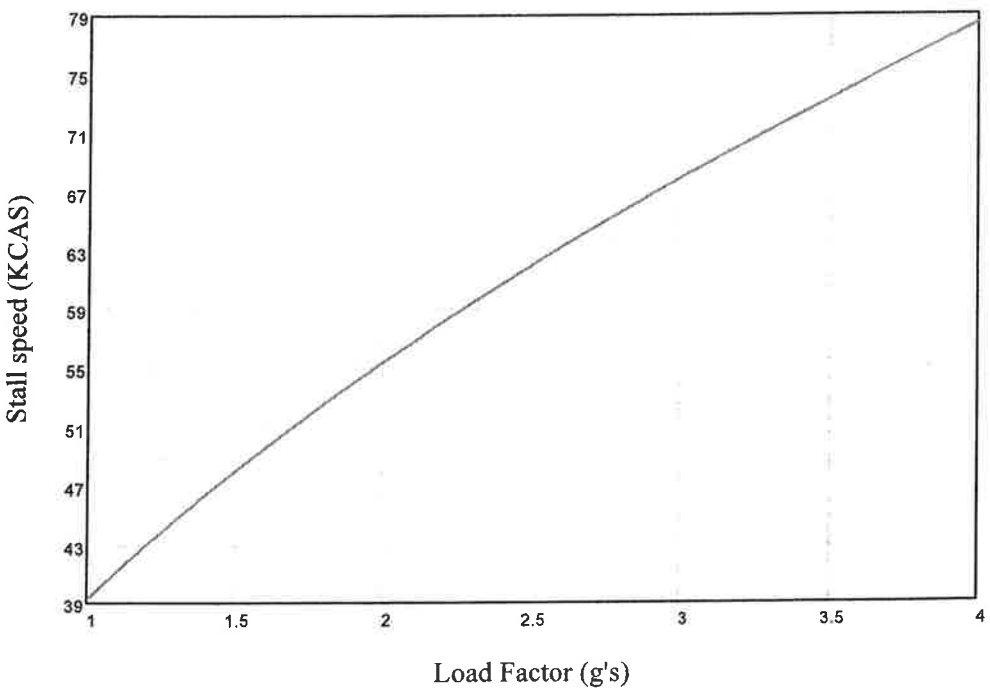
Table 17: Stall speeds

NOTE

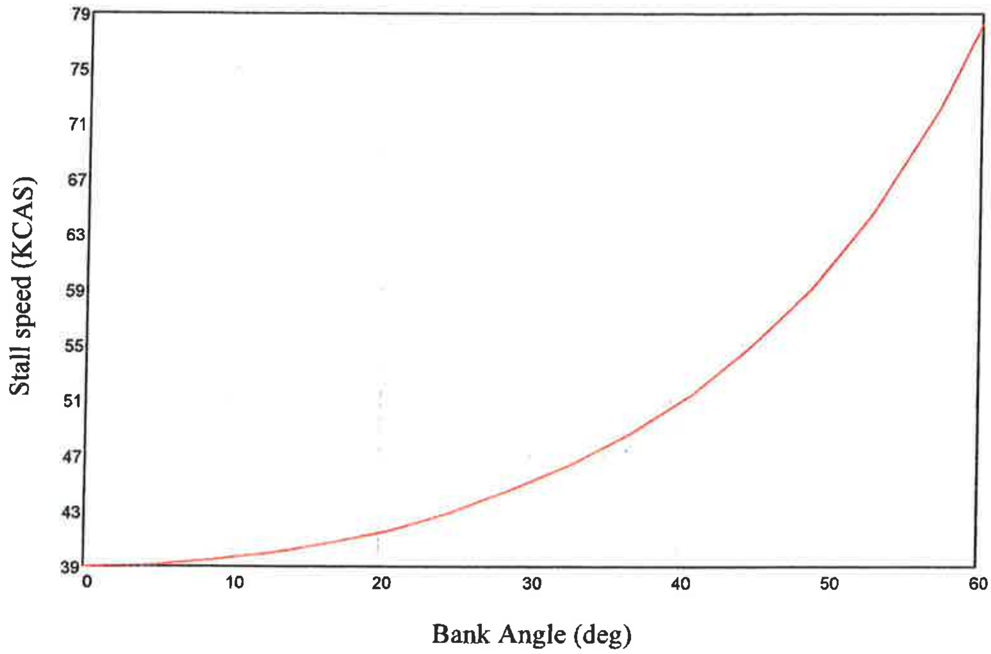
The stall is preceded by light buffeting around **5-10 KIAS** above stall speed.

WARNING

STALL SPEED INCREASE WITH THE SQUARE ROOT OF LOAD FACTOR AND DURING TURNS AS THE ANGLE OF BANK INCREASES:



Picture 3: Stall speed (flap fully extended) versus load factor



Picture 4: Stall speed (flap fully extended) versus bank angle

2.3 *Flap extended speed range*

The Flap extended speed range with idling engine is from V_{S0} **= 39 KCAS (28 KIAS)** to V_{FE} = 80 KCAS (80 KIAS).

2.4 *Maximum maneuvering speed*

The maximum maneuvering speed is V_A **= 108 KCAS (111 KIAS).** The maximum Operational speed is V_O **= 90 KCAS (91 KIAS).**

2.5 *Maximum structural cruise speed*

The maximum structural cruise speed is V_H **=** V_{NO} **= 116 KCAS (120 KIAS)** in smooth air and straight level non-accelerated flight and with caution.

2.6 *Never exceed speed*

The never exceed speed is V_{NE} **= 142 KCAS (150 KIAS).**

2.7 *Crosswind and wind limitation*

The maximum demonstrated crosswind velocity is V_{WIND} **= 15 KTS.**

The maximum speed in presence of gust must be established to be below **VO = 90 KCAS (91 KIAS)**.

2.8 *Service ceiling*

The maximum operative service ceiling is **5500 m (18000 ft)**.

2.9 *Load factors*

Maximum positive load factor is **+ 4 g's**.
Minimum negative load factor is **– 2 g's**.
Maximum positive load factor with flap fully down is **+ 2 g's.**
Minimum negative load factor with flap fully down is **0 g's.**

2.10 *Prohibited maneuvers and types of operation*

The aircraft is only approved for VFR day operations. No aerobatic maneuvers are authorized, including spins and bank angles exceeding 60°. No flight in icing conditions.

NOTE

Acrobatic flight means an intentional maneuver involving an abrupt change in an aircraft's attitude, an abnormal attitude, or abnormal acceleration not necessary for normal flight.

2.11 *Powerplant Limitations*

The following limitations apply for the powerplant use:

Gauge	YELLOW ARC	GREEN ARC	RED RADIAL LINE/ARC
Tachometer	**1000-1400 RPM**	**1400-5500 RPM**	**5800 RPM**
Maximum RPM for all operations		max 5 min	5800
Maximum RPM for all operations		continuous	5500
Full Throttle Static RPM		Not above	5400
Full Throttle Static RPM		Not below	5100

Oil Temp.	**50°C-90°C (122°F-194°F)**	**90°C-130°C (194°-266° F)**	**140°C (284°F)**
Min. Oil Temp. for takeoff		Needle must be seen to move off the stop before takeoff	

Oil Pressure	**0,8-2,0 bar (12-29 psi)**	**2,0-5,0 bar (29 -73 psi)**	**7 bar (102 psi)**
Minimum Oil Pressure		in level flight or climb	2 bar (29 psi)
Minimum Oil Pressure		in descent	0,8 bar (12 psi)

CHT	**135°C-150°C (275°F-302°F)**	**90°C-135°C (194°F-275°F)**	**150°C (302°F)**
Maximum Cylinder Head Temperature		**150°C (302°F)**	

Table 18: Powerplant limitations

2.12 *Smoking*

Smoking is prohibited inside the aircraft or outside when refueling.

2.13 *Maximum Operational Air Temperature*

The outside air temperature range for aircraft operations is -25°C to 50°C (-13F to 122F) (Limited by the Rotax Engine permitted range). Charts in paragraph 9 list the performance variations with respect the outside temperature. The above mentioned limit has been selected in order to represent a good compromise between performances and in order to introduce a conservative margin of safety against operation in harsh environments.

2.14 *Weights*

Maximum takeoff and landing weight is **560 kg (1235 lb).**

Maximum baggage in station L1 (see Picture 5) **is 20 kg (44 lb).**

Max baggage in station L2 (see Picture 5) **is 10 kg (22 lb).**

Max total baggage (L1+L2) **is 20 kg (44 lb).**

Minimum pilot weight **is 40 kg (88 lb)**

Normal pilot weight in compliance to ref. [1] **is 86 kg (190 lb).**

2.15 *Fuel*

Total fuel capacity is **81 Liters (21.4 gal)**

Total usable fuel capacity is **80 Liters (21.1 gal)**

Approved Fuel Type:

- ✓ ***91 Aki or higher***
- ✓ ***95 RON or higher***
- ✓ ***100 LL* or *100 grade aviation gasoline (only for short periods!)***

3 EMERGENCY PROCEDURES

This chapter provides checklists and other procedures for dealing with emergencies that may occur. Emergencies caused by aircraft malfunctions are rare if proper preflight inspections and maintenance are performed. En route weather emergencies can be minimized or eliminated by careful flight planning and good judgment when unexpected weather is encountered. However, should an emergency arise, the basic guidelines outlined in this section should be considered and applied as necessary to correct the problem.

WARNING

P300 KITE ENGINE IS NOT CERTIFIED AND CAN FAIL AT ANY TIME. NEVER FLY OVER AREAS WHERE A SAFE LANDING CANNOT BE MADE IF ENGINE FAILS.

3.1 *Engine Failures*

3.1.1 Engine Failure During Takeoff Run

ITEM	DEVICE	VALUE
1	Throttle	Idle
2	Brakes	Apply
3	Ignition Switches	OFF
4	Master Switch	OFF

Table 19: Engine failure procedure (during takeoff)

3.1.1.1 Engine Failure immediately after Takeoff

ITEM	DEVICE	VALUE
1	Move the control stick FORWARD to maintain airspeed	58 KCAS (55 KIAS)
2	Fuel Shutoff Valve	OFF
3	Ignition Switches	OFF
4	Wing Flaps	as required
5	Master Switch	OFF
6	Cabin Heat	OFF

Table 20: Engine failure procedure (just after takeoff)

3.1.1.2 Engine Failure During Flight

ITEM	DEVICE	VALUE
1	Airspeed	Best sink rate speed 58 KCAS (55 KIAS)
2	Carburetor Heat	ON
3	Fuel Shutoff Valve	ON
4	Fuel Pump	ON
5	Ignition Switches	ON
6	Cabin Heat	OFF

Table 21: Engine failure procedure (during flight)

NOTE

A slightly higher speed will give better distance over the ground if gliding into wind; a slightly lower speed if gliding downwind If height permits, attempt restart under the above conditions.

3.1.1.3 Air start & Limitations

If the engine stops in flight, it may be restarted by simply applying fuel and ignition, provided that the propeller is still wind milling. The following procedure addresses only air starts using the starter motor.

CAUTION

DO NOT DEPRESS STARTER BUTTON WHILE PROPELLER IS ROTATING.

ITEM	DEVICE	VALUE
1	Ignition Switches	OFF
2	Increase angle of attack & reduce speed until propeller stops rotation	
3	Establish Glide	67 KCAS (65 KIAS)
4	Fuel	ON
5	Fuel Pump	ON
6	Master	ON
7	Ignition Switches	ON
8	Starter Button	Depress
9	Throttle	Idle
10	Repeat as necessary: Ensuring propeller has stopped rotation before each restart attempt.	

Table 22: Air start procedure

NOTE

The engine cools quickly with the propeller stopped. Choke may be required to start if outside temperature is low and the time between attempted restarts is long.

3.1.2 Fire

3.1.2.1 Fire During Start On The Ground

ITEM	DEVICE	VALUE
1	Cranking	Fuel pump OFF. CONTINUE to attempt starting which will draw flames and accumulated fuel through the carburetor and into the engine.
If engine starts,		
2	Power	2500 RPM
3	Fuel	OFF & allow engine to empty carburetor
4	Engine	Inspect for damage

If engine fails to start,			
5	Cranking	CONTINUE attempting to start the engine. If no start in 15 seconds, shut off fuel & continue to crank for another 15 seconds.	
6	Fire Extinguisher	Obtain and use. **(Call a ground attendant for extinguisher if not installed).**	
7	Engine	SECURE:	
		A Master Switch	OFF
		B Ignition Switch	OFF
		C Fuel Pump Switch	OFF
		D Fuel Shutoff Valve	OFF
8	Fire	Extinguish using fire extinguisher, wool blanket, or earth.	
9	Fire Damage	Have authorized people inspect, repair or replace damaged components and wiring before conducting another flight. Determine cause of fire.	

Table 23: Fire during start on the ground

3.1.2.2 *Engine Fire in Flight*

ITEM	DEVICE	VALUE
1	Throttle	CLOSED
2	Fuel Shutoff Valve	OFF
3	Mag Switches	OFF
4	Master Switch	OFF
5	Fuel Pump Switch	OFF
6	Cabin Air	OFF
7	Airspeed	72 KCAS (70 KIAS) (If fire is not extinguished and there is sufficient height, consider increasing airspeed to blow out the fire).
8	Forced Landing	Execute (as described in Emergency Landing without Engine Power).

Table 24: Fire in flight

3.1.2.3 *Electrical Fire In Flight*

ITEM	DEVICE	VALUE
1	Master Switch	OFF
2	All Other Switches	OFF
3	Vents/cabin air (*)	OPEN
If fire appears out and electrical power is necessary for continuance of flight:		
4	Master Switch	ON
5	Fuses	CHECK for faulty circuit, **DO NOT** replace until fault is cleared.
6	Radio/Electrical Switches	ON one at a time, with delay after each until short circuit is localized.
7	Land as soon as possible to inspect for damage	

Table 25: Electrical fire during start on the ground

3.1.2.4 Cabin Fire

ITEM	DEVICE	VALUE
1	Master Switch	OFF
2	Vents/Cabin Air (*)	OPEN
3	Land as soon as possible to inspect for damage.	
(*) It is forbidden to open the cockpit doors in flight		

Table 26: Cabin fire

NOTE

It is safe to open the canopy in flight up to 100 mm (4"), and to hold it in this position manually. If released, the canopy will tend to close by aerodynamic force.

3.1.3 Forced Landings

3.1.3.1 Airstrip Emergency Landing without Engine Power

ITEM	DEVICE	VALUE
1	Airspeed	58 KCAS (55 KIAS) - 63 KCAS (60 KIAS) (flaps UP) Approach 54 KCAS (50 KIAS) (flaps DOWN)
2	Fuel Shutoff Valve	OFF
3	Fuel Pump	OFF
4	Ignition Switches	OFF
5	Wing Flaps	as required
6	Master Switch	OFF
	Note: IF FIRE	Release canopy just before touchdown. Cushion face at touchdown with folded coat or cushion
7	Touchdown	Slightly Tail Low

Table 27: Emergency airstrip landing without engine power

3.1.3.2 Emergency Landing with Engine Power

ITEM	DEVICE	VALUE
1	Airspeed	58 KCAS (55 KIAS)
2	Wing Flaps	1st Stage
3	Fuel Pump	OFF
4	Selected Field	FLY OVER, Note terrain/obstructions/wires
5	Radio and Electrical Switches	ON
6	Wing Flaps	FULL (on final approach)
7	Airspeed	54 KCAS (50 KIAS)
8	IF FIRE	Release canopy just before touchdown.
9	Touchdown	Slightly Tail Low
10	Ignition Switch	OFF
11	Brakes	as required

Table 28: Emergency with engine power

3.1.3.3 *Emergency Landing without Engine Power*

ITEM	DEVICE	VALUE
1	Airspeed	63 KCAS (60 KIAS) - 67 KCAS (65 KIAS)
2	Flap and gear	UP
3	Fuel Shutoff Valve	OFF
4	Fuel Pump	OFF
5	Ignition Switches	OFF
6	If time allows put propeller in horizontal position with starter motor, then	
7	Master Switch	OFF
8	IF FIRE	Release canopy just before touchdown.
9	Touchdown	Level attitude

Table 29: Emergency forced landing with engine power

3.1.3.4 *Ditching (Forced Water Landing)*

ITEM	DEVICE	VALUE
1	Radio	Transmit MAYDAY on area frequency, giving location and intentions.
2	Heavy Objects	SECURE
3	Approach	High winds, heavy seas - INTO wind. Light winds, heavy swells - Parallel to swell
4	Wing Flaps	UP
5	Power	Establish 50 ft/min descent at 49 KCAS (45 KIAS)
6	Canopy	Just after splashdown open the canopy
7	Touchdown	Level attitude
8	Face	Cushion at touchdown with folded coat or cushion
9	Seat Belts	Release seat belts. Evacuate through the canopy.
10	Life jackets	Inflate

Table 30: Emergency water landing

3.1.3.5 *With a Flat Tire*

ITEM	DEVICE	VALUE
1	Wing Flaps	FULL
2	Approach	Normal
3	Touchdown	GOOD TIRE FIRST (IF MAIN TIRE IS DOWN) - hold aircraft off flat Tire as long as possible with aileron control.
4	Touchdown	FOR NOSE WHEEL FLAT – flap up just after touch down and hold aircraft off as long as possible with elevator control up.

Table 31: Emergency landing with a flat tire

3.1.4 Electrical Power Supply System Malfunctions

Reset circuit breaker. If it fails again, continue to next airport and inspect or replace, then run the engine. If the breaker fails again, determine cause before continuing flight.

3.2 *Recovery from an Inadvertent Spin*

While inadvertent spins are unlikely, should this occur, proceed as follows:

ITEM	DEVICE	VALUE
1	Stick	Move the control stick FORWARD far enough to break the stall.
2	Throttle	IDLE
3	Ailerons	NEUTRALIZE
4	Rudder	DEPRESS and HOLD PEDAL in the direction OPPOSITE the spin
5	Full down elevator may be required at aft center of gravity loadings to assure optimum recoveries.	
6	HOLD these control inputs until rotation stops. Premature relaxation of control inputs may extend the recovery.	
7	As rotation stops, neutralize rudder and make a smooth recovery from the resulting dive	

Table 32: Recovery from the spin

3.3 *Carburetor Heating*

Vaporization of the fuel and expansion of air through the carburetor causes cooling of the mixture, which can be as much as 15°C (59F) below the temperature of the ambient air. This permits moisture in the air to condense and form ice.

The carburetor heat system serves to prevent the formation of ice within the carburetors, where it primarily forms on the throttle plates and obstructs the airflow, with resultant eventual engine stoppage. The first indications of icing are an RPM drop or a drop in manifold pressure. Progressive icing will cause obstruction of the carburetor, which manifests itself in the form of a rough running engine. During this time the smaller volume of air aspirated has richened the mixture.

Ice can form more rapidly with partial throttle, due to the lower pressure in the carburetor. At full throttle, the danger is lessened somewhat. Avoid using carburetor heat during takeoff or climb because it creates a small power loss.

<u>CAUTION</u>

DURING DESCENT & APPROACH, THE CARBURETOR HEAT SHOULD BE USED BECAUSE LOW POWER SETTINGS CREATE LOW PRESSURES IN THE INDUCTION MANIFOLD. IN CASE OF A GO-AROUND, TURN THE CARBURETOR HEAT OFF. PROLONGED USE OF CARBURETOR HEAT WITH MORE THAN 80% POWER APPLIED COULD PROVOKE DETONATION.

<u>CAUTION</u>

WHEN USING CARBURETOR HEAT, PULL KNOB TO FULL ON. DO NOT USE PARTIAL CARBURETOR HEAT.

Carburetor icing can occur when on the ground, particularly when the aircraft and engine have become damp overnight. Check carburetor heat during power check as normal, then, prior to lining up on the runway, close the throttle completely. If a low idle speed or engine stoppage occurs, ice is present. Remove it with twenty seconds of carburetor heat and then test again prior to takeoff.

3.3.1 Ignition Malfunction

A sudden engine roughness or misfiring is usually evidence of ignition problems. Switching from both ON to alternately switching each system OFF will identify which system is malfunctioning. Switch to the good system and proceed to the nearest airport for repairs.

3.3.2 Low Oil Pressure

A rapid drop from normal indicated pressure to indication "0":	
ACTION	Check for smell of oil
	Open cabin air vents
	Observe for signs of spilled oil on cowls, windscreen, wing surface.
	If strong smell of oil exists, and oil appears on the airframe, reduce power to minimum to sustain level flight and proceed to nearest landing area.
	Be prepared to make an emergency landing en route, should the engine fail.
Gradual reduction in oil pressure below observed normal position:	
ACTION	Observe oil temperature indications
	If oil temperature is higher than normal and all other engine functions are normal, proceed to the nearest landing area, land and check oil levels and external oil system for leaks
	If oil level is low, top-up to full mark on dipstick
	Allow engine to cool, start engine, run to full power and recheck oil pressure
	If oil pressure readings are normal, proceed with flight, observing both oil pressure and temperature readings.
	If, after the run-up check, the oil pressure remains low, have the engine checked by an authorized person.

Table 33: Emergency for low oil pressure

3.3.3 High Oil Pressure

An increase of normal Oil pressure to high pressures with Oil temp. and CHT increase	
ACTION	Check for smell of oil, If yes open cabin air vents
	Observe for signs of spilled oil on cowls, windscreen, wing surface.
	Reduce power to minimum to sustain level flight and proceed to nearest landing area following procedure at par. 3.1.3.2.
	Be prepared to make an emergency landing en route, should the engine fail, following procedure 3.1.3.3 and/or 3.1.2.4.
	After landing have the engine checked by an authorized person.
An increase of normal oil pressure to high pressures with oil temp. and CHT constant	
ACTION	Continuously observe oil temperature and CHT indications
	Proceed to the nearest available landing airfield, land and check oil levels, external oil system and oil gauge.
	After landing have the engine checked by an authorized person.
An increase of normal oil pressure to constantly indicating end of pressure scale	
ACTION	The oil pressure gauge is not working

	Continuously observe oil pressure, oil temperature and CHT indications
	Proceed to the nearest available landing airfield, land and check oil levels and external oil system.
	After landing have the engine checked by an authorized person.

Table 34: Emergency for high oil pressure

3.4 *Inadvertent icing encounter (see also par. 3.3)*

Icing conditions are very difficult to predict. Aviation weather services may predict light, moderate, or severe icing conditions at certain locations and altitudes and no icing will be encountered.

At other times, icing conditions may not be forecast and any of the above levels of icing may occur. When unexpected icing conditions are encountered, immediate action must be taken to divert from them. It may be possible to descend to a lower, warmer altitude, or it may be necessary to return to an area where no icing is present.

NOTE

Ice is especially prevalent if flying in clouds or visible moisture. This aircraft is approved for VFR flight only.

CAUTION

ICE ACCUMULATION ON THE WINGS AND OTHER AIRFRAME COMPONENTS WILL GREATLY INCREASE THE STALL SPEED OF THE AIRCRAFT AND RESULT IN UNPREDICTABLE FLIGHT CHARACTERISTICS. ICE ACCUMULATION OVER ENGINE INDUCTION AIR INLET CAN CAUSE ENGINE ROUGHNESS AND/OR LOSS OF POWER.
ICE FORMATIONS ON THE PROPELLER MAY CAUSE SEVERE PROPELLER/ENGINE VIBRATIONS. ICE ACCUMULATION OVER THE PITOT TUBE MAY CAUSE ERRONEOUS AIRSPEED INDICATIONS. ICE BUILD-UP ON THE WINDSHIELD WILL DISTORT VISION AND PROBABLY OBSCURE FORWARD VISIBILITY.

When icing conditions exist, apply carburetor heat often in all flight regimes. The main symptom of icing in the induction system will be loss of power.
Never use partial carburetor heat. Partial heat could make matters worse. Remember, full heat or nothing. Be especially vigilant at lower power settings. It is good practice to use carburetor heat during any descent where you have reduced power, especially for landing.
In conditions conducive to icing or if ice was noted during engine run-up, perform another carburetor heat check immediately before takeoff. DO NOT leave carburetor heat on for the actual takeoff.

3.5 *Alternator failure*

In event of alternator failure, the battery will support the onboard avionics. In event of double power source failure, use analogue on-board instruments and land normally.

3.6 *Overvoltage*

In the event of overvoltage (voltage is over 16V):

ITEM	DEVICE	VALUE
1	Master switch	OFF
2	Voltmeter	Verify the decrease of voltage
3	Master switch	ON
4	Voltmeter	Verify the increase of voltage (within limits). If the voltage does not return within limits, proceed as follows
5	Equipments	OFF (All electrical equipments may fail in case of overvoltage)
6	Engine is not affected by overvoltage	

3.7 *Loss of flight controls*

3.7.1 Aileron Failure

In the event of failure of the ailerons, control may still be maintained with the remaining control surface (Rudder). Plan to land as soon as practical on a runway or field that minimizes the crosswind component. Do not perform abrupt maneuvers. Use an approach airspeed that is higher than normal for safety.

3.7.2 Rudder Failure

In the event of failure of the rudder, control may still be maintained with the remaining control surface (Ailerons). Plan to land as soon as practical on a runway or field that minimizes the crosswind component. Do not perform abrupt maneuvers. Use an approach airspeed that is higher than normal for safety.

3.7.3 Elevator Failure

In the event of a failure of the elevator control system, the aircraft may be controlled and landed using the stabilizer trim, power and flaps. Land as soon as possible and, if possible, elect an airport with a long runway. Prior to landing, establish level flight while maintaining a safe airspeed using a combination of power, elevator trim and flap setting. Reduce power to establish a shallow decent. Adjust airspeed with trim. At touchdown, reduce power.

3.7.4 Uncommanded trim actuation

In the event of uncommanded trim motion disable the system by pulling the TRIM circuit breaker located in panel right side.

3.8 *Loss of primary instruments*

In the event of instrument failure, it is recommended to return to the airfield and perform a normal landing, paying very close attention to keep the airspeed well above stall speed. If the airspeed indicator is not functioning, the general feel and sound of the aircraft should be used to ensure an adequate airspeed is maintained for safe flight and landing.

4 NORMAL PROCEDURES

This chapter provides checklists and other procedures for normal operations. The following speeds are based on a maximum weight of 560 Kg (1235 lb) and may be used for any lower weight for normal procedures:

Takeoff:	
Initial Climb Out, 1st Stage Flap	63 KCAS (60 KIAS)
Short Field Takeoff, 1st Stage Flap Speed at 50 ft.	58 KCAS (55 KIAS)
When clear obstacles retract flaps and climb at	67 KCAS (65 KIAS)
Climb, Flaps Up:	
Normal	67 KCAS (65 KIAS)
Best Rate of Climb, at low altitude	67 KCAS (65 KIAS)
Note: Best Obstacle clearance gradient is with 1st Stage Flaps at 58 KCAS (55 KIAS); but do not maintain this condition for longer than necessary as this may cause excessive engine temperatures.	
Landing Approach:	
Normal Approach, Flaps Full	58 KCAS (55 KIAS)
Short Field Approach, Flaps Full – beware of wind gradient	54 KCAS (50 KIAS)
Baulked Landing:	
Apply full power; allow speed to increase (if required) to:	58 KCAS (55 KIAS)
Retract Flap to 1st Stage until clear of obstacles, then retract flap fully and continue to climb at or above	67 KCAS (65 KIAS)
Maximum Turbulent Air Penetration Speed	105 KCAS (108 KIAS)
Maximum Demonstrated Crosswind Velocity	15

Table 35: Speed for normal operations

Annex F also reproduces the following normal procedures in order to summarize the normal operations for the pilot's comfort and safety in the format of Check List. Annex F can also be detached from this POH as indicated and be used separately but, whenever detached from this POH must be located inside the cockpit where the POH is located.

4.1 *Preflight check*

Prior to flight, the aircraft should be inspected in accordance with the following checklists.

NOTE

Visually check aircraft for general condition during walk-around inspection. In cold weather, remove any accumulation of frost, ice or snow from the wing, tail and control surfaces.

ITEM	DEVICE	VALUE
1	*Master*	*ON*
2	*Nav Lights*	*ON*
3	*Check external lights*	*Working*
4	*Master & Nav Lights*	*OFF*
5	*All switches*	*OFF*
6	*Ignitions*	*OFF (Switch is DOWN)*
7	*Gascolator*	*Drain*
8	*Fuel level*	*Check fuel inside tanks, visually and by the fuel gauges*

9	*Propeller 1*	*Visually check that propeller bolts are in place*
10	*Propeller 2*	*Manually check propeller bearing play*
11	*Propeller 3*	*Visually check blade condition*
12	*Spinner bolts*	*Secured*
13	*Cowling screws*	*Secured*
14	*Nose landing gear 1*	*Check Tire inflation pressure*
15	*Nose landing gear 2*	*Visually check general condition*
16	*Nose landing gear 3*	*Visually check that bolts are secured*
17	*Right main landing gear 1*	*Tire inflation pressure*
18	*Right main landing gear 2*	*General condition*
19	*Right main landing gear 3*	*Visually check that bolts are secured*
20	*Fuel drain*	*Check for* presence of water and debris
21	*Right wing 1*	*Inspect leading edge*
22	*Right wing 2*	*Fuel tank vent open*
23	*Right wing 3*	*Remove Pitot cover and visually check integrity*
24	*Right aileron 1*	*Verify hinges integrity*
25	*Right aileron 2*	*Verify push rod integrity*
26	*Flap 1*	*Verify hinges integrity*
27	*Flap 2*	*Verify push rod integrity*
28	*Flap 3*	*Verify flap play*
29	*Fuselage right side*	*Undamaged*
30	*Elevator 1*	*Verify hinges integrity*
31	*Elevator 2*	*Verify hinge attachments*
32	*Elevator 3*	*Visually check that bolts are secured*
33	*Rudder 1*	*Verify hinges integrity*
34	*Rudder 2*	*Visually check that bolts are secured*
35	*Rudder 3*	*Manually check that it moves freely*
36	*Fuselage tailcone*	*Manually check that it is secured*
37	*Left wing*	*Repeat the applicable right wing checks*
38	*Internal controls and cables*	*Manually and visually check that are free*
39	*Baggage*	*Manually & visually check for security*
40	*Aircraft documents*	*Visually check availability and validity*
41	*Safety equipments*	*Visually check presence if prescribed*

Table 36: Pre-flight checks

4.2 *Prior to Startup*

ITEM	DEVICE	VALUE
1	*Parking brake*	*ON*
2	*Master*	*ON*
3	*Flaps*	*UP*
4	*Throttle*	*IDLE*
5	*Switches*	*OFF – circuit breakers in*
6	*Ahead and behind*	*Check for clear areas*
7	*Fuel valve*	*Select the lower level tank*
8	*SHOUT "CLEAR PROP"*	

Table 37: Prior to start-up checks

4.3 *Engine Starting*

ITEM	DEVICE	VALUE
1	*Carb heat*	*Set to ON If/when necessary*
2	*Starter Choke*	*Set to ON if cold startup*
3	*Throttle*	*Set to closed*
4	*Fuel Boost Pump*	*Set to ON*
5	*Propeller Area*	*CLEAR*
6	*Master Switch*	*Set to ON*
7	*Ignition Switch*	*Set to BOTH*
8	*Turn key to START (If the engine is cranking below 600RPM, it will not start)*	
9	*As soon as engine is running, throttle back to idle speed of 1000-1400RPM*	
10	*Engine instruments*	*Check for proper functioning*
11	*Starter Choke*	*Close gradually*

Table 38: Start-up procedure

NOTE

Check engine oil pressure immediately after start. If you do not see oil pressure within 10 seconds, shut down the engine immediately and determine the cause.

NOTE

During the check with one ignition system only, the inactive spark plugs can tend to foul slightly. To clean plugs, run the engine with both ignition systems ON for a few seconds, then recheck the second system.

NOTE

Warm-up the engine with a fast idle of 1600 - 2500 RPM until the oil temperature reaches 50°C (122 F). As soon as the oil reaches 50°C (122 F), it is possible to do the run-up.

NOTE

If the mag drop is more than 250 RPM lower than normal, the engine should be examined to determine the cause.

NOTE

Full throttle should achieve 5100 to 5400 static RPM when on the ground not in motion.

NOTE

The aircraft should be pointed into wind to improve cooling.

4.4 *After Starting*

ITEM	DEVICE	VALUE
1	*Check oil pressure*	*Within Green arc*
2	*Engine RPM*	*Set to 2500RPM*
3	*Carb heat*	*Set to OFF If/when necessary*
4	*Nav.Lts.*	*Set to ON*
5	*Engine warm up temp. check 1*	*Water = 60 °C (140 F)*
6	*Engine warm up temp. check 2*	*Oil = 50 °C (122 F)*
7	*Master Radio*	*Set to ON*
8	*Aux*	*Set to ON*
9	*Gps*	*Switch ON*
10	*Transponder*	*Set to Standby*
11	*Instruments*	*Verify that are all properly working*

Table 39: After start-up check

4.5 *Taxiing*

ITEM	DEVICE	VALUE
1	*Carburetor heat control knob*	*Pushed fully in (fully closed)*
2	*Maintain this for all ground operations unless heat is absolutely necessary*	
3	*Speed*	*Minimize*
4	*Brake*	*Minimize use*

Table 40: Taxiing

NOTE

Taxiing over loose gravel or cinders should be done at low engine speed to avoid abrasion and stone damage to the propeller. Accelerate slowly over loose gravel or cinders.

4.6 *Before Takeoff*

ITEM	DEVICE	VALUE
1	*Parking brake*	*ON*
3	*Fuel valve*	*Select the higher level tank*
4	*Altimeter set.*	*set local barometric pressure or field elevation as req.*
5	*Canopy*	*Verify that is closed and locked*
6	*Elevator trim*	*Set to Neutral*
7	*Set throttle to 4000RPM 1*	*mags 1 - off 3 sec check 250RPM max drop*
8	*Set throttle to 4000RPM 2*	*mags 2 - off 3 sec check 250RPM max drop*
9	*Set throttle to 4000RPM 3*	*mags 1 + 2 & check 4000RPM*
10	*Carb heat*	*Pull fully ON and check for a 100RPM drop*
11	*Carb heat*	*Set to OFF*
12	*Full power check*	*Increase RPM to give min 5100RPM*
13	*Set throttle to idle*	*Check smooth running*
14	*Seat belt(s)*	*Fastened*
15	*Passenger briefing*	*Brief passenger if required/applicable*

16	*Fuel pump*	*Set to ON*
17	*Flaps*	*Set to stage 1*
18	*Check controls*	*Check full, free and correct movements*
19	*Radio*	*Verify freq. & call for instructions/information*
20	*Final approach*	*Verify if clear of landing traffic*
21	*Brakes*	*Release & taxi for runway, align & takeoff*

Table 41: Before takeoff check

4.7 *Normal Takeoff*

ITEM	DEVICE	VALUE
1	*Flaps*	*Check stage 1 is set*
2	*Fuel boost pump*	*Set to ON*
3	*Throttle*	*Set to full power*
4	*Elevator Control*	*At 25-30 KIAS raise nose wheel & wait for lift off at ≈ 46 KIAS*
5	*Landing Gear*	*Brake wheels & center nose wheel.*
6	*Climb Speed*	*Establish 55 KIAS & retract flaps after clearing obstacles*

Table 42: Normal takeoff procedure

4.8 *Crosswind Takeoff*

Takeoff into strong crosswinds is normally performed with the minimum flap setting necessary for the field length. With the ailerons partially deflected into the wind, the aircraft is accelerated to a speed slightly higher than normal, and then pulled off positively and smoothly to prevent possible settling back to the runway while drifting. When clear of the ground, make a coordinated turn into the wind to correct for drift.

4.9 *After Takeoff*

ITEM	DEVICE	VALUE
1	*Flaps*	*Fully UP*
2	*Climb at*	*65 KIAS*
3	*At 300 ft reduce power to*	*5000RPM or any set up below 5500RPM*
4	*Fuel pump*	*OFF above 1000 ft*

Table 43: Just after takeoff procedure

4.10 *Best Angle of Climb (V_X)*

ITEM	DEVICE	VALUE
1	*Flaps*	*Fully UP*
2	*Climb at*	*55 KIAS*
3	*Set RPM to*	*Full throttle or any set up below 5500 RPM*

Table 44: Best angle of climb procedure

NOTE

During climb, monitor CHT & oil temperatures to avoid exceeding their limits. Any excessive readings may indicate a failure. Should this occur, decrease the rate of climb in order to increase the airspeed for improved cooling and reduce RPM to 5000 RPM.

4.11 *Best Rate of Climb (V_Y)*

ITEM	DEVICE	VALUE
1	*Flaps*	*Fully UP*
2	*Climb at*	*65 KIAS*
3	*Set RPM to*	*Full throttle or any set up below 5500 RPM*

Table 45: Best rate of climb procedure

NOTE

During climb, monitor CHT & oil temperatures to avoid exceeding their limits. Any excessive readings may indicate a failure. Should this occur, decrease the rate of climb in order to increase the airspeed for improved cooling.

4.12 *Cruise*

ITEM	DEVICE	VALUE
1	*Power*	*not above 5500RPM (5100-5400 Normal)*
2	*Elevator Trim*	*adjust as necessary*

Table 46: Cruise procedure

NOTE

Normal cruising is performed between 75% and 90% power. Continuous cruise should not be above 5500 RPM.

4.13 *Approach to Landing*

ITEM	DEVICE	VALUE
1	*Brakes*	*Test*
2	*Speed*	*below 80 KIAS*
3	*Fuel pump*	*Set to ON*
4	*Carb heat*	*Fully out – Pull in case of possible ice condition**
5	*Flaps 1*	*Check ASI white arc*
6	*Flaps 2*	*Select first stage*
7	*Flaps 3*	*Select stage 2*

Table 47: Approach

4.14 *Normal landing*

ITEM	DEVICE	VALUE
1	*Speed*	*55 KIAS*
2	*Flaps*	*Select 3rd stage (below 80 KIAS)*
3	*Car heat*	*Fully out – Pull in case of possible ice condition**
4	*Power*	*Reduce to idle over fence*
5	*Touchdown*	*Main wheel first @ 46 KIAS*
6	*Brakes*	*Apply as required*
7	*Flaps*	*Retract as appropriate for braking/taxiing*
8	*Airspeed*	*55 KIAS*

Table 48: Normal landing procedure

4.15 *Crosswind Landing*

The maximum crosswind velocity of 15 Kts has been demonstrated at FULL Flap. However, in strong crosswind conditions use the minimum flap consistent with the strip length available. Use the Wing Low technique right through to touchdown and land on the mains first.

4.16 *Short/soft field Takeoff and Landing procedures*

ITEM	DEVICE	VALUE
1	*Flaps*	*Set stage 1*
2	*Brakes*	*Fully locked*
3	*Throttle*	*Set to full power*
4	*Brakes*	*Release*

Table 49: Short field takeoff procedure

ITEM	DEVICE	VALUE
1	*Speed*	*48 KIAS*
2	*Flaps*	*Fully down (below 80 KIAS)*
3	*Power*	*Reduce to idle over fence*
4	*Touchdown*	*Main wheels first @ 44 KIAS*
5	*Brakes*	*Apply as required*
6	*Flaps*	*Retract as appropriate for best braking.*

Table 50: Short field landing procedure

4.17 *Balked Landing*

ITEM	DEVICE	VALUE
1	*Throttle*	*Set to full power*
2	*Carb Heat*	*Fully IN or Cold*
3	*Flaps*	*Retract to 1st or 2nd stage*
4	*Speed*	*55 KIAS until clear of obstacles*
5	*Flaps*	*Retract to 1st stage until clear of obstacles, increase speed to 60 KIAS, then retract fully, continue to climb at or above 65 KIAS.*

Table 51: Balked landing procedure

4.18 *After Landing*

ITEM	DEVICE	VALUE
1	*Flaps*	*Set to fully UP*
2	*Fuel Boost Pump*	*Set to OFF*
3	*Car heat*	*Fully in – COLD*

Table 52: After landing procedure

4.19 *Engine shutdown*

ITEM	DEVICE	VALUE
1	*Throttle*	*Set idle*
2	*Trims*	*Set to neutral*
3	*Avionics*	*Set to OFF*
4	*Ignition Switch*	*Set to OFF & remove the key*
5	*Master Switch*	*Set to OFF*

Table 53: Engine shutdown procedure

4.20 *Noise reduction*

Increased emphasis on improving the quality of our environment requires renewed effort on the part of all pilots to minimize the effect of aircraft noise on the public.

(i) At heights below 670 m (2000 feet), avoid flying close to houses or over parks and recreational areas.

(ii) During approach to, or departure from an airport, climb after takeoff and descent for landing should be made so as to avoid prolonged flight at low heights near noise sensitive areas.

5 PERFORMANCE

5.1 *Takeoff and landing distances*

5.1.1 Takeoff distance

The following takeoff distance figures apply at MAUW, in still air, on a short dry grass surface at sea-level and with the first flap stage down.

PERFORMANCE	VALUE
Takeoff ground roll with 50 KCAS (46 KIAS) lift off speed	190 m (620 ft)
Total distance to clear 15 m (50 foot) obstacle with 58 KCAS (55 KIAS) over the fence	320 m (1050 ft)

Table 54: Takeoff performances

Takeoff ground roll performance charts are described in Annex E

5.1.2 Landing distances

The following landing distances figures apply at MAUW, in still air, on a short dry grass surface at sea-level and with full flap down.

PERFORMANCE	VALUE
Total landing distance to clear 15 m (50 foot) obstacle with 58 KCAS (55 KIAS) entrance speed	350 m (1150 ft)
Landing ground roll with 50 KCAS (46 KIAS) touch down speed	100 m (330 ft)

Table 55: Landing performances

Landing ground roll performance charts are described in Annex E

5.1.3 Rate of climb

The following rate of climb applies for the MTOW configuration at sea-level:

PERFORMANCE	VALUE
Best angle of climb @ (V_X)	900 fpm @ sea level and 58 KCAS (55 KIAS)
Best rate of climb @ (V_Y)	1100 fpm @ sea level and 67 KCAS (65 KIAS)

Table 56: Climb rates

The following rate of descend applies for the MTOW configuration at sea-level:

PERFORMANCE	VALUE
Minimum descent glide speed	500 fpm @ sea level and 49 KCAS (44 KIAS)
Best range glide speed	550 fpm @ sea level and 67 KCAS (65 KIAS)

Table 57: Sink rates

NOTE

To maximize distance achieved into wind, increase glide speed by approximately 1/3 of wind velocity.

NOTE

Glide performance will be improved (if time permits) by stopping propeller windmilling.

5.1.4 Cruise speeds RPM and Fuel consumption

The following data applies for the MTOW configuration at sea-level:

PERFORMANCE	VALUE
Airspeed	116 KCAS (120 KIAS)
RPM setup	5500 RPM
Fuel consumption	22 liters/hr (5.81 gal/hr)
Endurance	3.1 hours (half hour reserve)
Still air range	370 naut. miles (half hour reserve)

Table 58: High speed cruise

PERFORMANCE	VALUE
Airspeed	102 KCAS (105 KIAS)
RPM setup	4800 RPM
Fuel consumption	16 liters/hr (4.22 gal/hr)
Endurance	4.5 hours (half hour reserve)
Still air range	460 naut. miles (half hour reserve)

Table 59: Economic speed cruise

NOTE

Make appropriate allowances for wind conditions which will assist in determining the most favorable altitude and power setting for a given trip.

6 WEIGHT AND BALANCE & EQUIPMENT LIST

This section contains basic weight and center of gravity information necessary to ensure correct loading. It records the weight and balance of the empty aircraft to which this POH applies.

6.1.1 Standard installed equipped list

Items listed in the following table were fitted to the aircraft at manufacture and were included in the aircraft standard empty weight. These items are in addition with respect to the aircraft airframe.

ITEM	CHK
Powerplant	
Engine 912ULS with Airbox	X
Propeller DUC SWIRL INCONEL	X
Flight Instruments	
Airspeed Indicator	X
Altimeter	X
Turn & Bank Indicator	X
Compass	X
Vertical Speed Indicator	X
Engine Instruments and Avionics	
Mini EIS which includes:	-
- 2 x CHT	
- 2 x EGT	
- Oil Temp Indicator	
- Oil Press Indicator	
- Airbox temp indicator + O.A.T.	
- voltmeter	
- ammeter	
- fuel press	
- MAP	
- fuel computer	
- RPM indicator	
- hour-meter	
Miscellaneous Equipment	
4 Points Seat Belts	X
Engine kill switch	X
Andair Fuel Valve	X
Cabin Fresh Air Intake	X
Key Canopy Lock	X
Aileron Electric Trim	X
Elevator Electric Trim	X
Electronic Flaps Controller	X
Gas Nose landing gear	X
Gear Legs Fairings	X
Wheels Fairings	X
Toe Brakes Pilot's Side	X
Plus Cabin Heating	X
Oil Inspection Door	X
Landing Lights inside E. Cowling	X
Strobe and Nav Lights	X
Radio Prewiring	X
Auxiliary Electric Socket	X
Fiber Panel and Consolle	X
White Paint with Sticker Livery	X

Pioneer Canopy Cover*	X
POH, Maintenance Manual *	X
Tools*	X
*NOTE: those items are not considered part of the aircraft configuration from the empty weight point of view.	

Table 60: Standard configuration equipment

6.1.2 Optional installed equipped list

Items listed in the Aircraft Configuration Document were added to the standard aircraft at manufacture and were included in the aircraft basic empty weight.

For specific information about use and maintenance of OEM installed equipment, please refer to the equipment User/Maintenance Manuals supplied and included inside the Owner Delivery Documentation Package.

6.1.3 Center of gravity (CG) range and determination

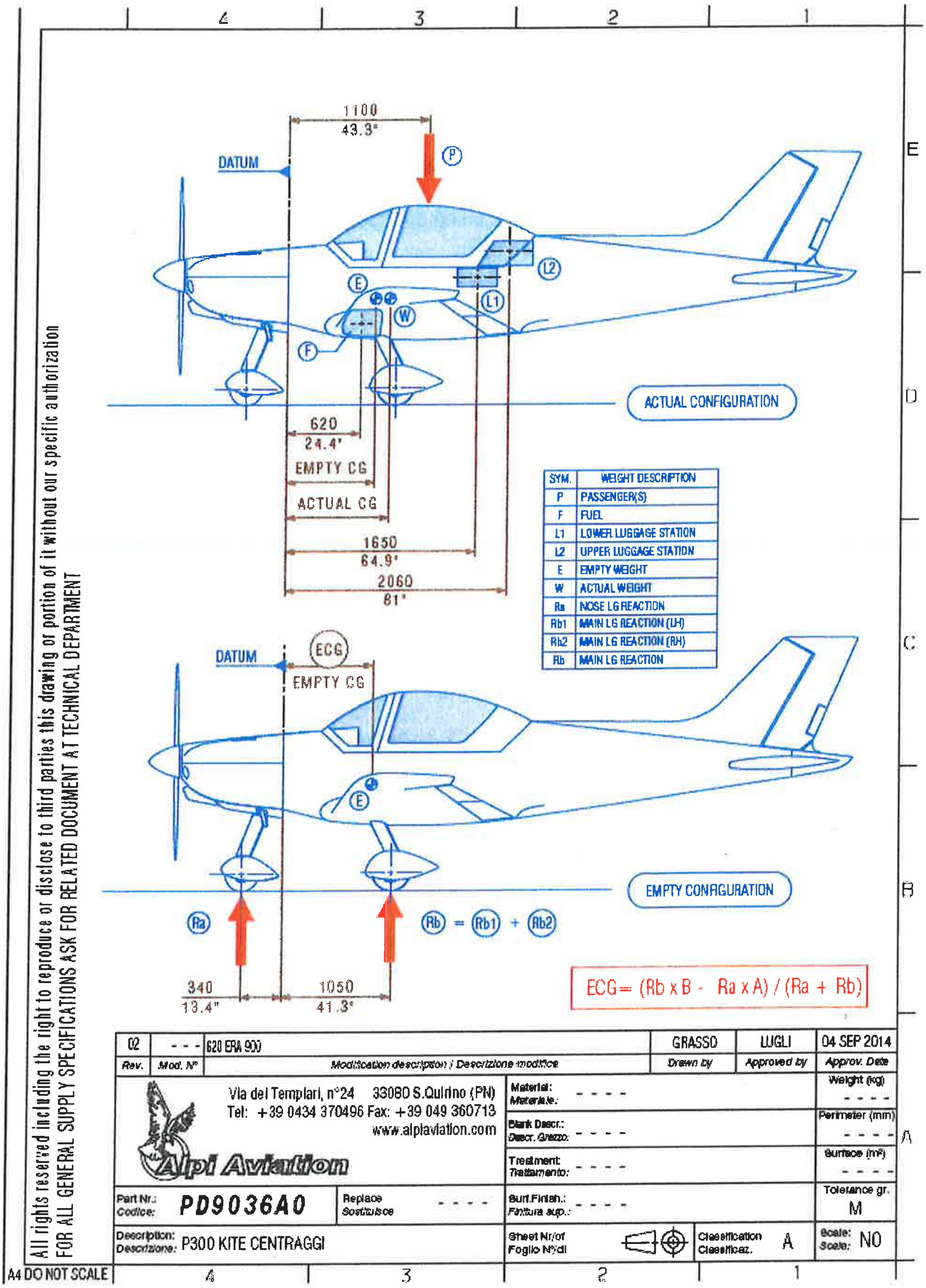
The CG ranges and limitations are listed in this table and covers the whole permitted CG envelope with reference to Picture 5.

Forward limit:	18% MAC = 730mm (28.74inch) AOD up to & including 420kg (925lb)
Intermediate variation	Linear from 420kg (925lb) to 560kg (1320lb) and up to 23% MAC
Aft limit:	30% of MAC, 895 mm (35.23 inch) aft datum at all weights
Datum:	Firewall bulkhead, front side, bottom.
MAC LE from Datum:	474 mm (18.66 inch)
MAC:	1422 mm (55.98 inch)
Leveling Means:	Spirit Level placed on canopy side rail & across canopy side rails
Crew Station "G"	1100 mm aft of datum (43.30 inch)
Fuel station "C"	620 mm aft of datum (24.4 inch)
Baggage station "H1"	1625 mm aft of datum (63.97 inch)
Baggage station "H2"	2060 mm aft of datum (81.10 inch)

Table 61: CG limits

6.1.3.1 Establishment of Geometry

Nominal dimensions A and B with respect to the reference DATUM, needed to establish the aircraft geometry in order to calculate the aircraft Empty Weight are shown below, in Picture 5.



Picture 5: W. & B. sheet

6.1.3.2 Empty CG determination

In order to check/calculate the aircraft Empty CG location follow these steps with reference to Picture 5:

1) Drain the tanks, or determine the quantity of fuel within them;
2) Level the aircraft using the canopy slide as the horizontal datum by placing chocks under the main wheels until the canopy slides are horizontal. Then close the canopy;
3) Ensure that the state of the aircraft is identical to that recorded in the Aircraft Equipment List of chapter 6.1.1 and/or 6.1.2, above;
3) Remove the chocks; place each chock on its respective scale; zero the scales. Ensure scales are identical height;
4) Place each set of scales and its chock back under its wheel;
5) Check that the aircraft is horizontal;
6) Take the readings from each of the scales as: ***Ra*** = Nose wheel reading, kg, ***Rb*** = ***Rb1*** (Left main wheel reading), kg + ***Rb2*** (Right main wheel reading), kg:

Arm aft of datum of the Empty CG: $$E_{CG} = \frac{B \cdot R_b - A \cdot R_a}{R_b + R_a}$$

Where E_{CG} is the CG arm aft of datum in mm;

7) Calculate the Empty CG moment multiplying the Empty Weight (***Ra+Rb***) times the calculated CG arm (E_{CG}) aft of datum:

Empty Weight Moment: $$EW_{Moment} = E_{CG} \cdot EW$$

8) Record the Empty CG arm (E_{CG}) and the Empty Weight (***EW***) and the Empty CG moment (EW_{Moment}) in the table in Annex A.

NOTE

This procedure should be followed whenever the empty weight of the aircraft is changed and whenever significant work is done to the suspension dampers. eg. changing their pressures or replacing them, or whenever the standard configuration or the basic configuration indicated in chapter 3.10.1 and/or 3.10.2 changes.

6.1.4 Actual CG Determination

In order to predict/calculate the aircraft actual CG location, follow these steps with reference to Picture 5 but using congruent units, S.I. (Millimeters or Meters, Kilograms and Liters). Note that this procedure assumes that the Empty Weight has been previously defined.

1) Determine the quantity of Fuel in the tank in Liters (Gallons) (***F***, with ref. to Picture 5);

2) Convert fuel volume in mass using the diagram in

Picture **6** and Picture 7;

3) Calc. Fuel moment (***F_{Moment}***) from datum using the diagram in Picture 8;

4) Determine Crew weight in Kilograms (Pounds) (***P*** with ref. to Picture 5);

5) Calc. Crew moment (***P_{Moment}***) from datum using the diagram in Picture 8;

6) Determine Baggage weight in Kilograms (Pounds) (***L1*** and ***L2*** with ref. to Picture 5);

7) Calc. Baggage moments (***$L1_{Moment}$ & $L2_{Moment}$***) from datum using the diagram in Picture 8;

8) Add all the calculated/derived moments (Baggage, Crew, Fuel and Empty Weight) to find out the Actual Weight Moment (***AW_{Moment}***):

Actual Weight Moment: $$AW_{Moment} = F_{Moment} + P_{Moment} + L1_{Moment} + L2_{Moment}$$

8) Add all the calculated/derived weights (Baggage, Crew, Fuel and Empty Weight) to find out the Actual Weight (***AW***):

Actual Weight: $$AW = F + P + L1 + L2 + EW$$

9) Calc. Actual Weight CG arm (***A_{CG}***) aft of datum:

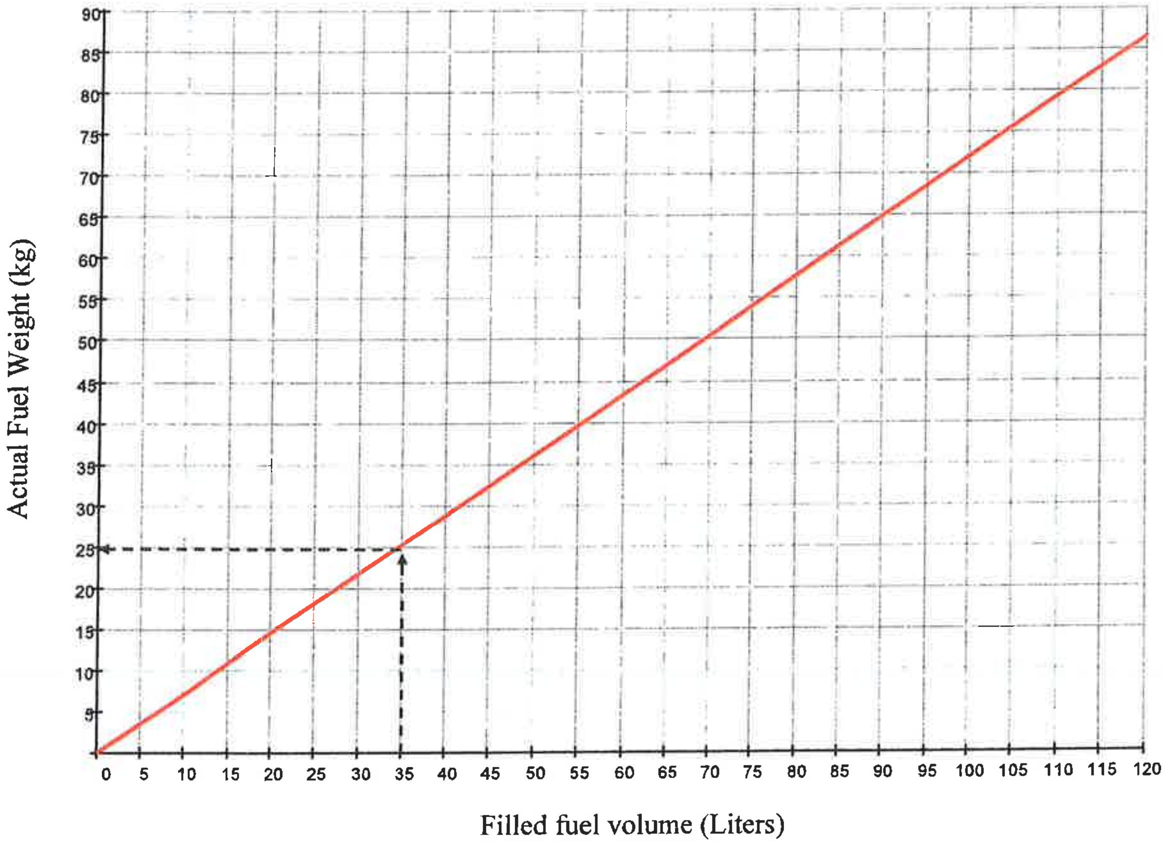
Actual Weight CG arm: $$AW_{CG}(mm) = {AW_{Moment}}/{AW}$$

10) Calc. Actual Weight CG % (***A_{CG}***) with respect the ***MAC*** (1.42 m)

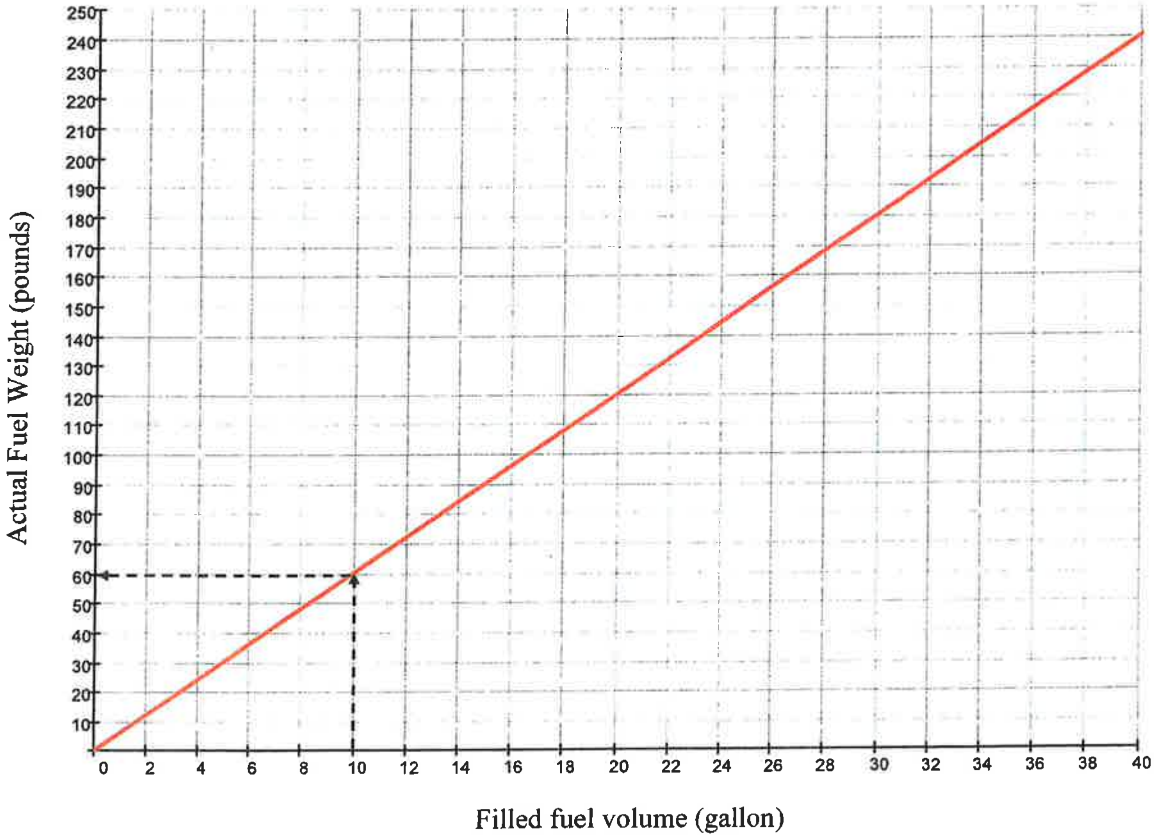
Actual Weight CG arm: $$AW_{CG}(\%) = {AW_{Moment}}/{AW \cdot MAC}$$

11) Check that Actual Weight (***AW***) and its arm (***A_{CG}***) are within the limitations represented by the diagrams in Picture 10 and Picture 11;

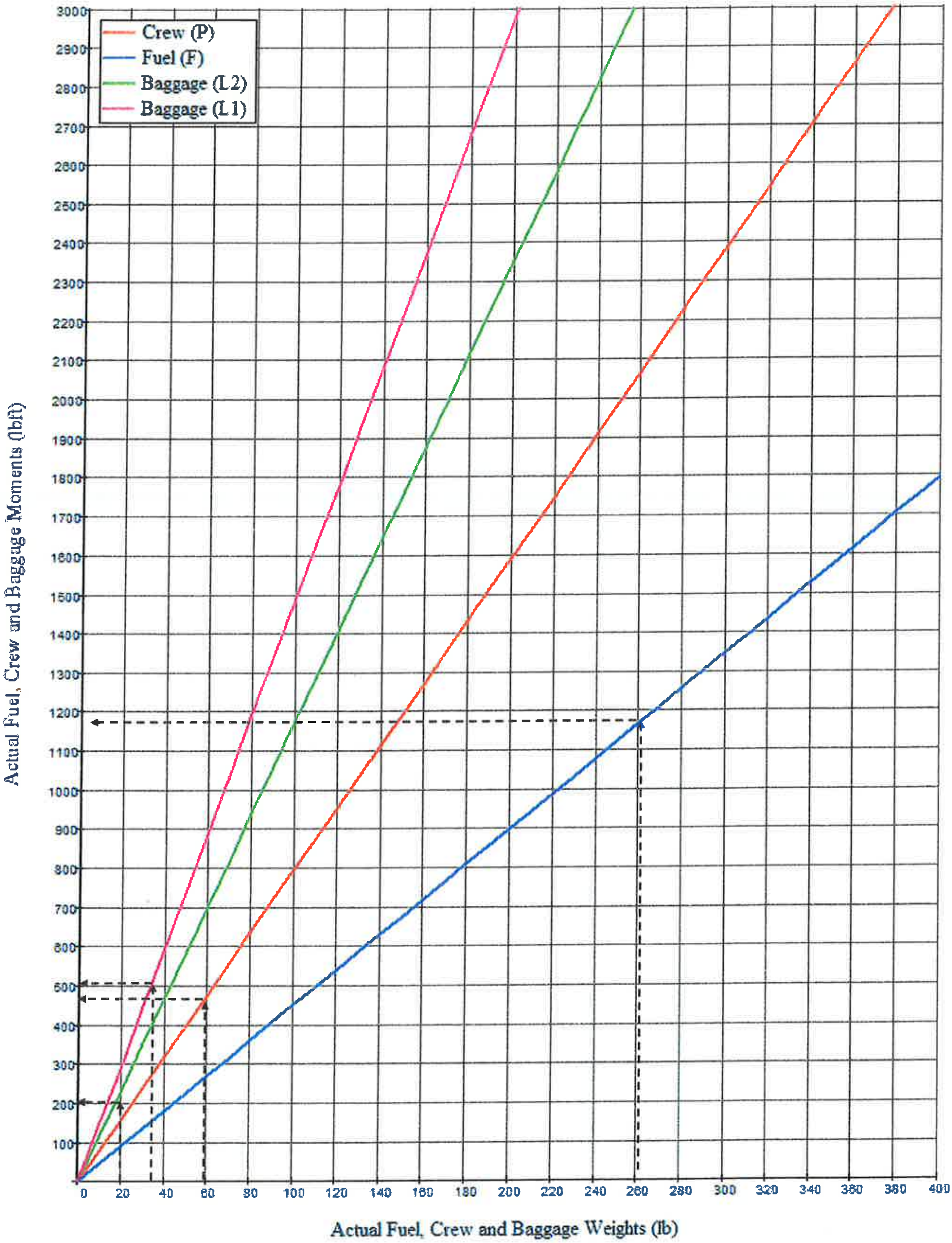
12) Record this arm and the Actual Weight in the table in Annex B.



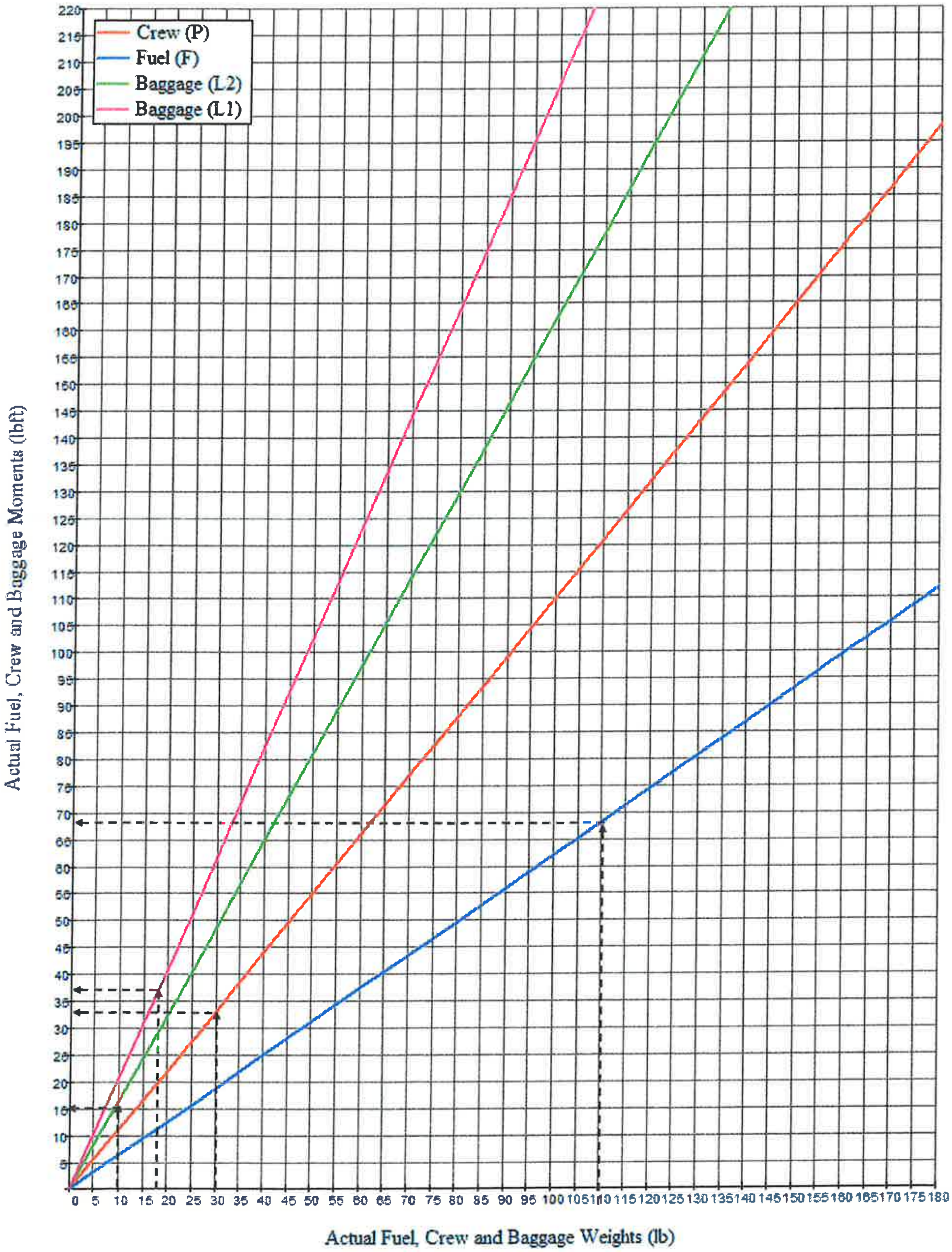
Picture 6: Chart to convert fuel volume into fuel weight (IS).



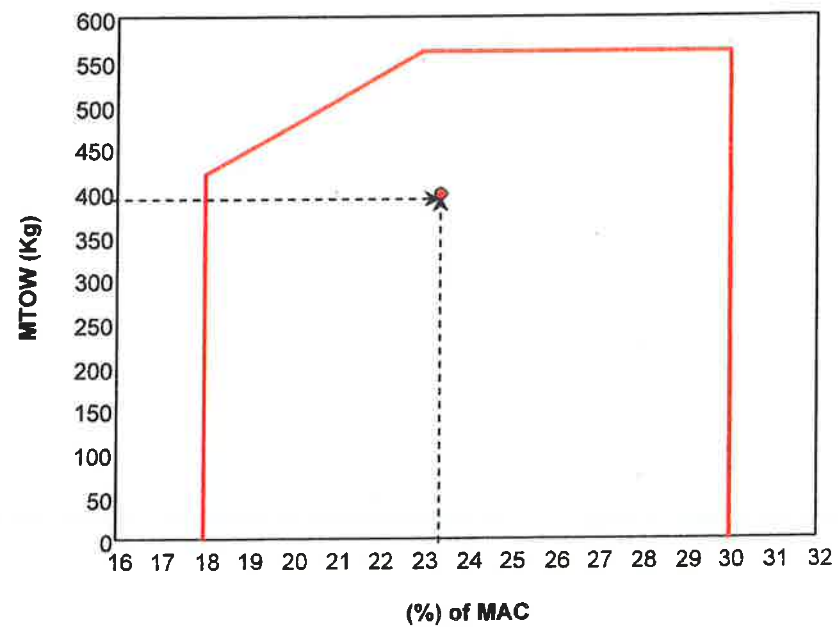
Picture 7: Chart to convert fuel volume into fuel weight (US).

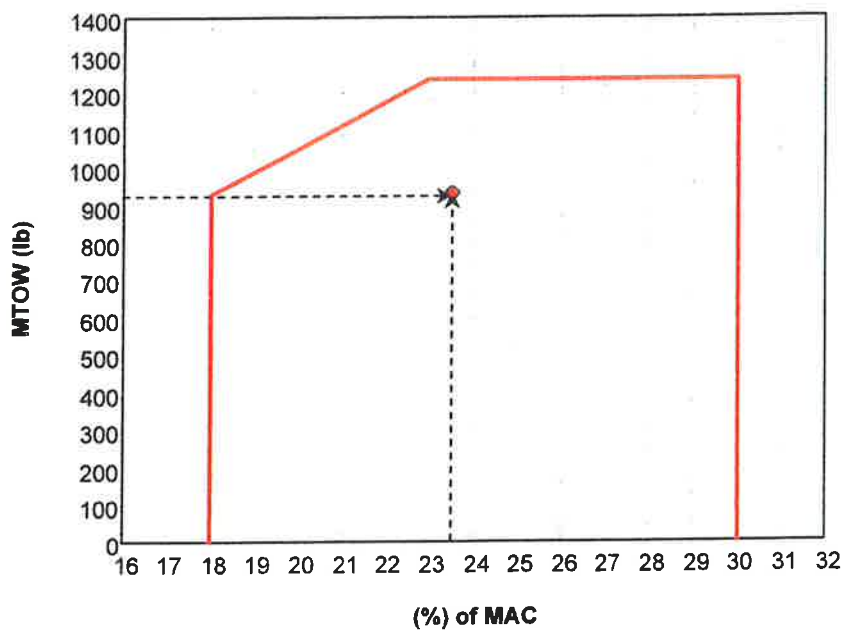


Picture 8: Chart to calculate Fuel, Baggage and Crew Moments from datum (IS)

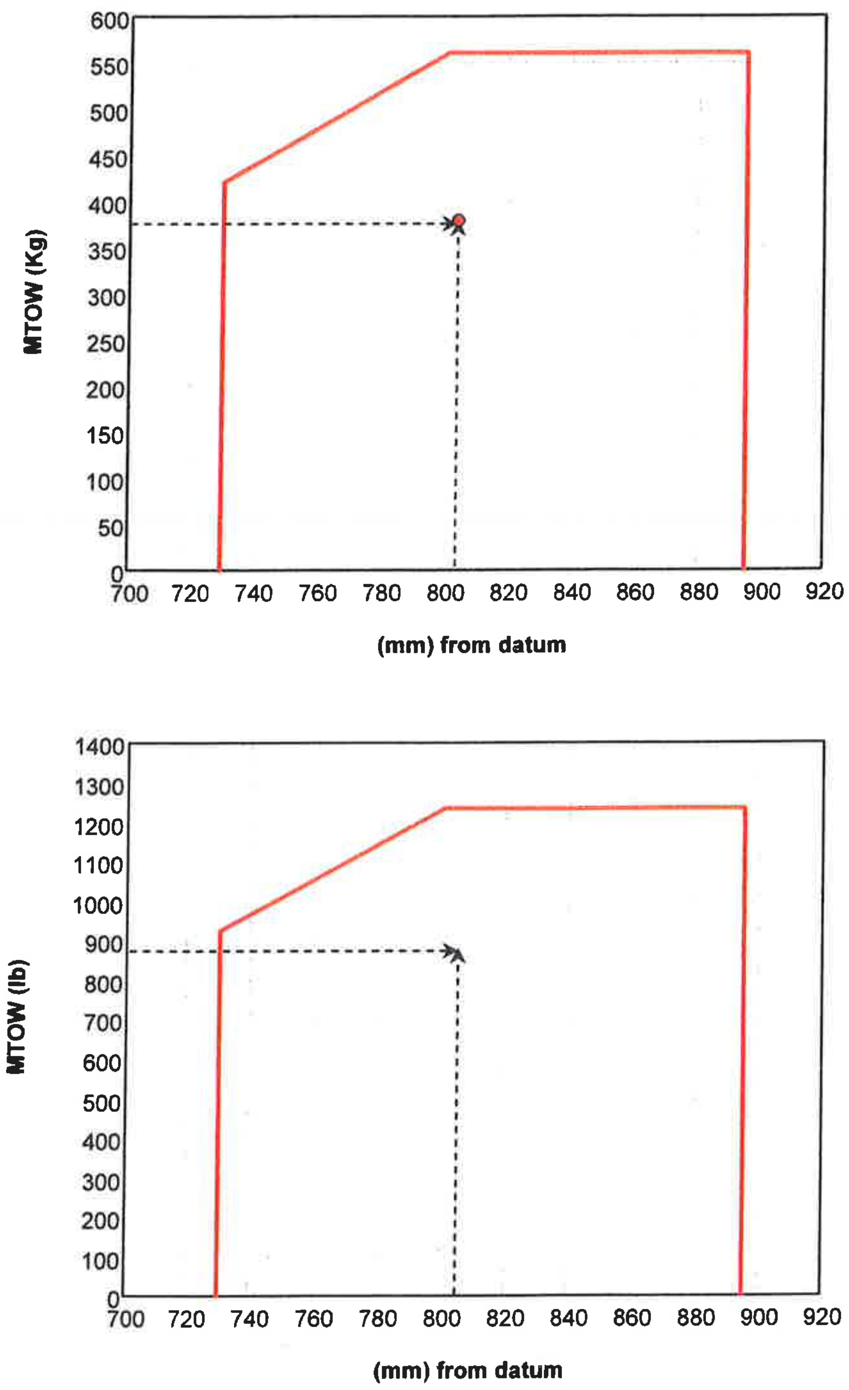


Picture 9: Chart to calculate Fuel, Baggage and Crew Moments from datum (US)





Picture 10: Permitted CG and Weight envelope – 1



Picture 11: Permitted CG and Weight envelope - 2

7 DESCRIPTION OF AIRCRAFT AND SYSTEMS

7.1 *General*

The aircraft has a pretty aerodynamic configuration that gives the good performances that characterize this model.

The overall aircraft layout is:

- Traditional cruciform tail configuration
- Low tapered wing platform
- Tricycle fixed landing gear
- Steerable nose landing gear
- 2 place, side by side arrangement with dual control sticks and a single central throttle
- Tractor propeller
- Hybrid structure made of wood and composite material glued together
- Horizontal stabilizer and vertical fin made of composite material
- Wood fabric covered control surfaces
- Detachable wing
- Very good visibility
- Blue polycarbonate fully transparent canopy

7.2 *Airframe*

The aircraft has an hybrid wood-composite material structure organized in a conventional layout. Moreover the main engine cowling, the wing skin, tail tips and the landing gear fairings are made of glass/carbon fiber composite material.

<u>The wing structure main structural components are not made of composite material.</u>

The fuselage structure has a spruce trussed composite material covered layout including the fin structure itself while the wing has a single main spar layout with 10 trussed ribs per half wing and a rear spar to transfer the aileron and flap loads to the wing structure and react to the drag and torsion forces transmitted to the D wing torque box.

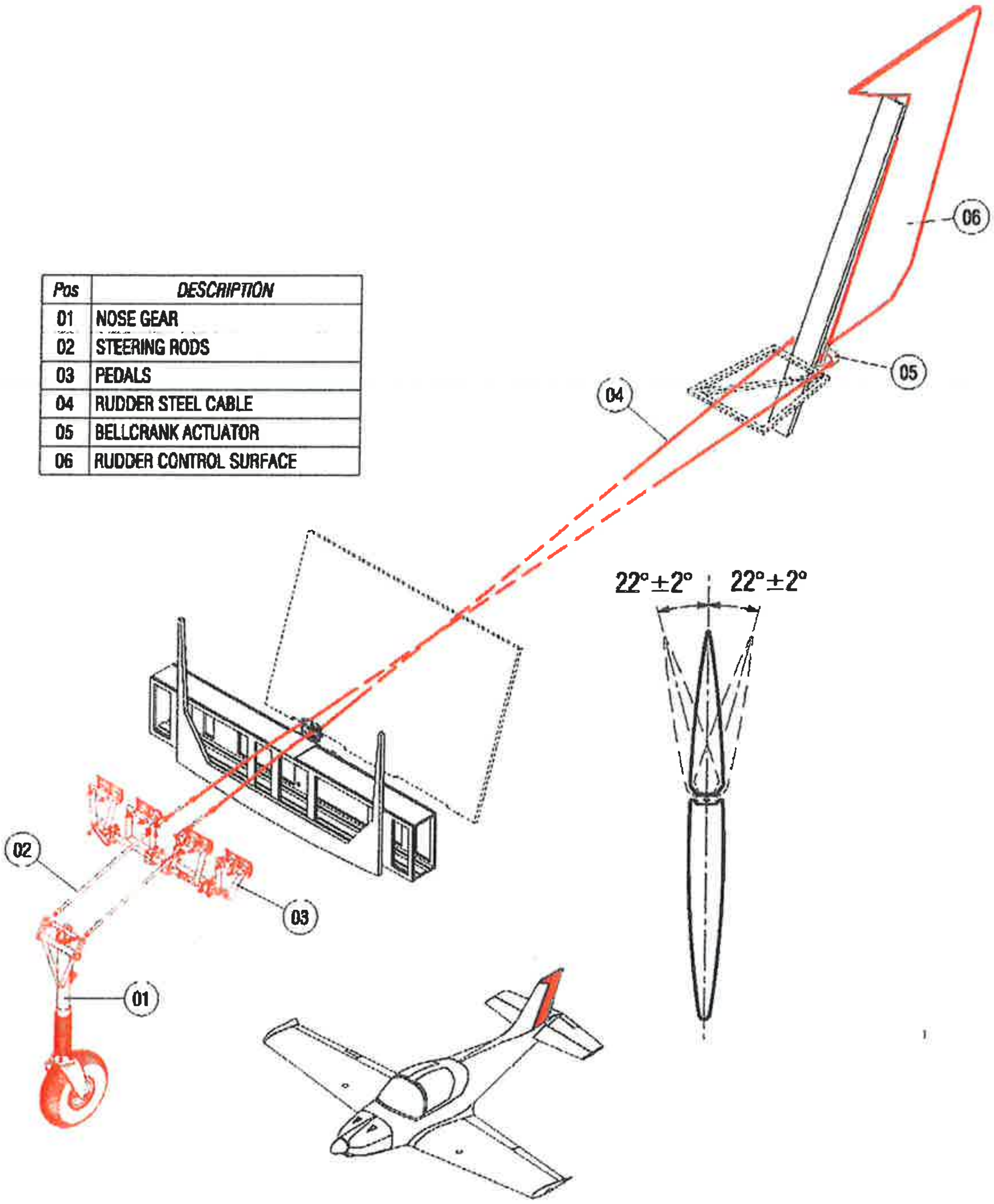
Each part of the aircraft structure is made of aircraft quality spruce wood and the skins are made of birch plywood introducing where needed also okumé, ash and poplar hard wood to spread out the concentrated loads as well as glass and carbon fiber skins.

7.3 *Flight controls*

The flight controls are briefly described herein including the information regarding the full movement travel and the attached control surface play to facilitate inspection during the pre-flight procedures.

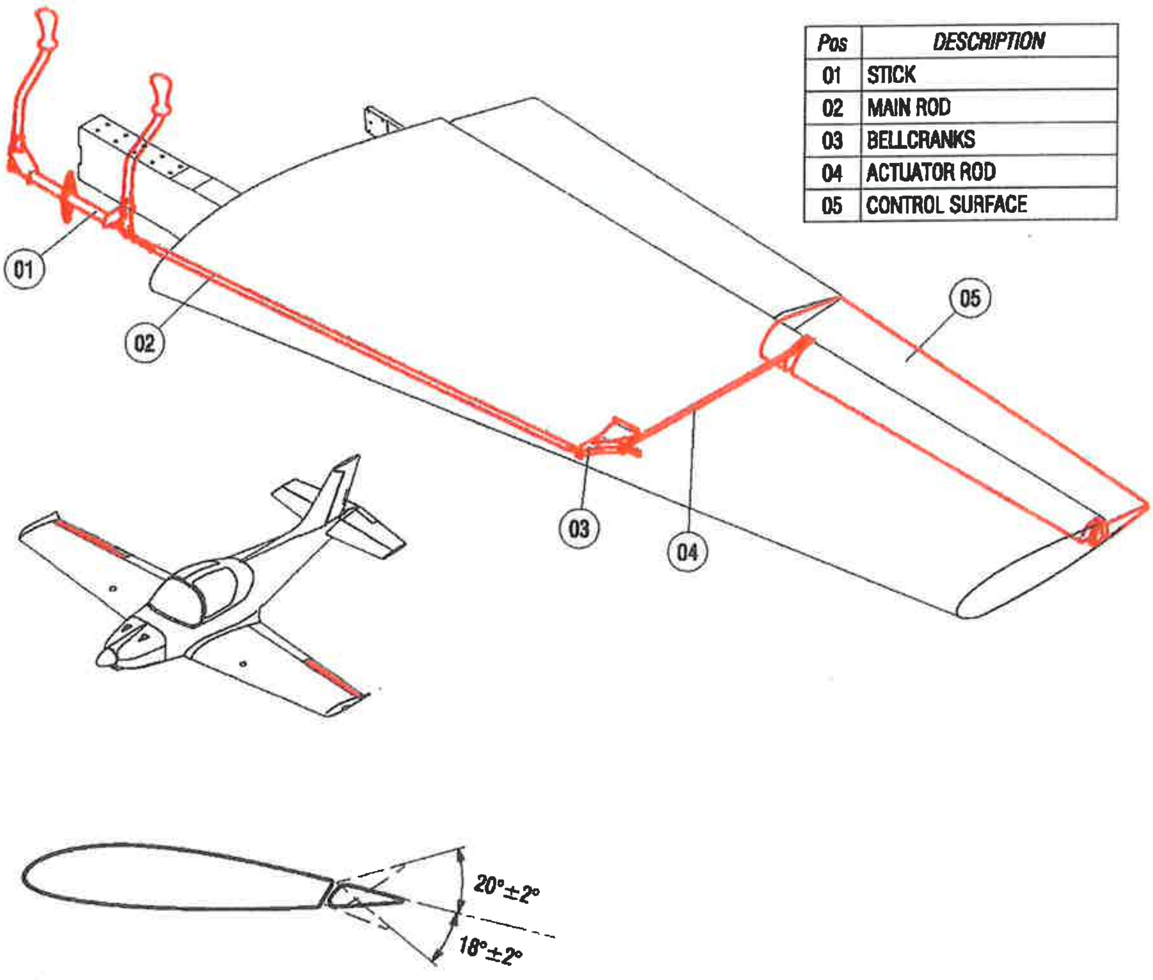
Rudder control system: The rudder control system consists of a closed loop made up of steel cables which are preloaded to keep them taunt.

Pos	DESCRIPTION
01	NOSE GEAR
02	STEERING RODS
03	PEDALS
04	RUDDER STEEL CABLE
05	BELLCRANK ACTUATOR
06	RUDDER CONTROL SURFACE



Picture 12: Rudder control system

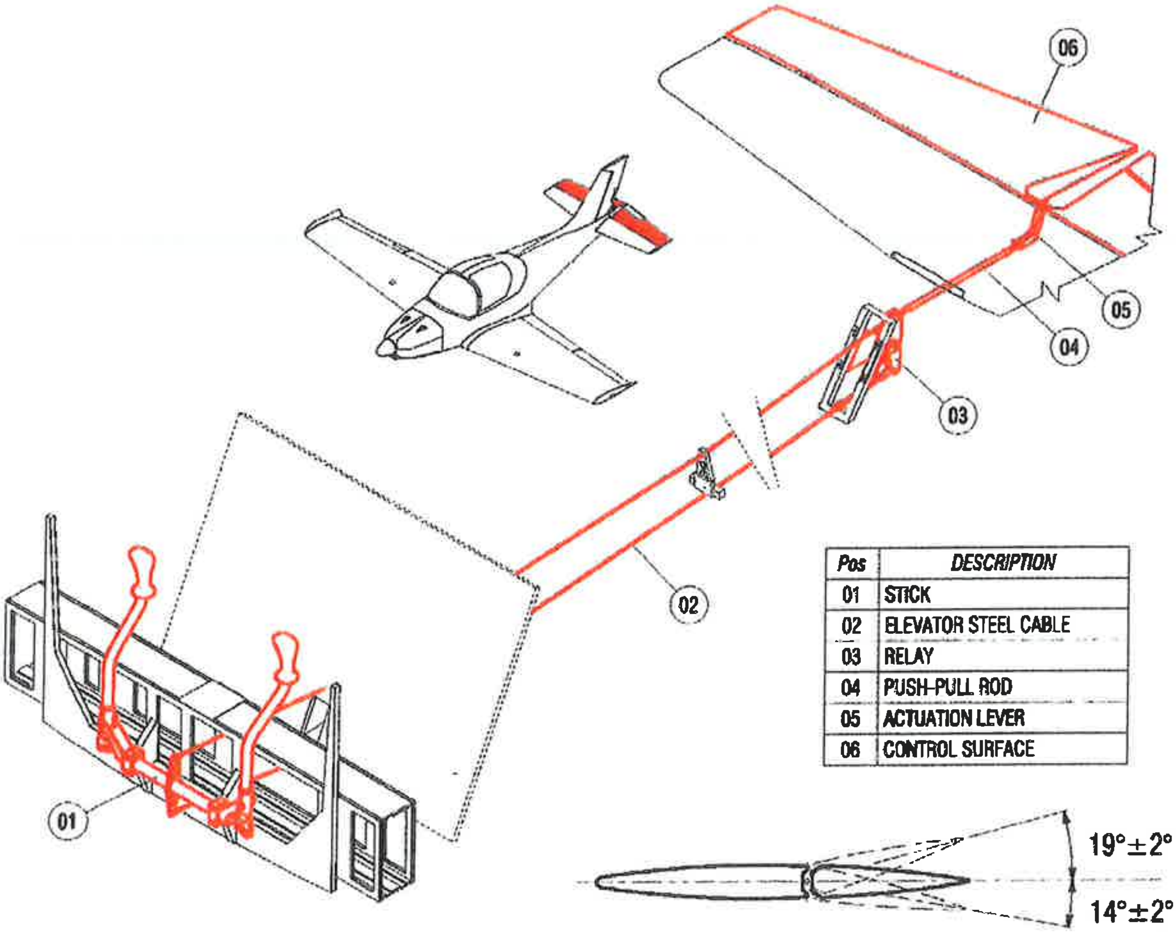
Aileron control system: The aileron control system is actuated by push rods so it is "rigid" and directly connected to the control surface without any cable interface.



Pos	DESCRIPTION
01	STICK
02	MAIN ROD
03	BELLCRANKS
04	ACTUATOR ROD
05	CONTROL SURFACE

Picture 13: Aileron control system

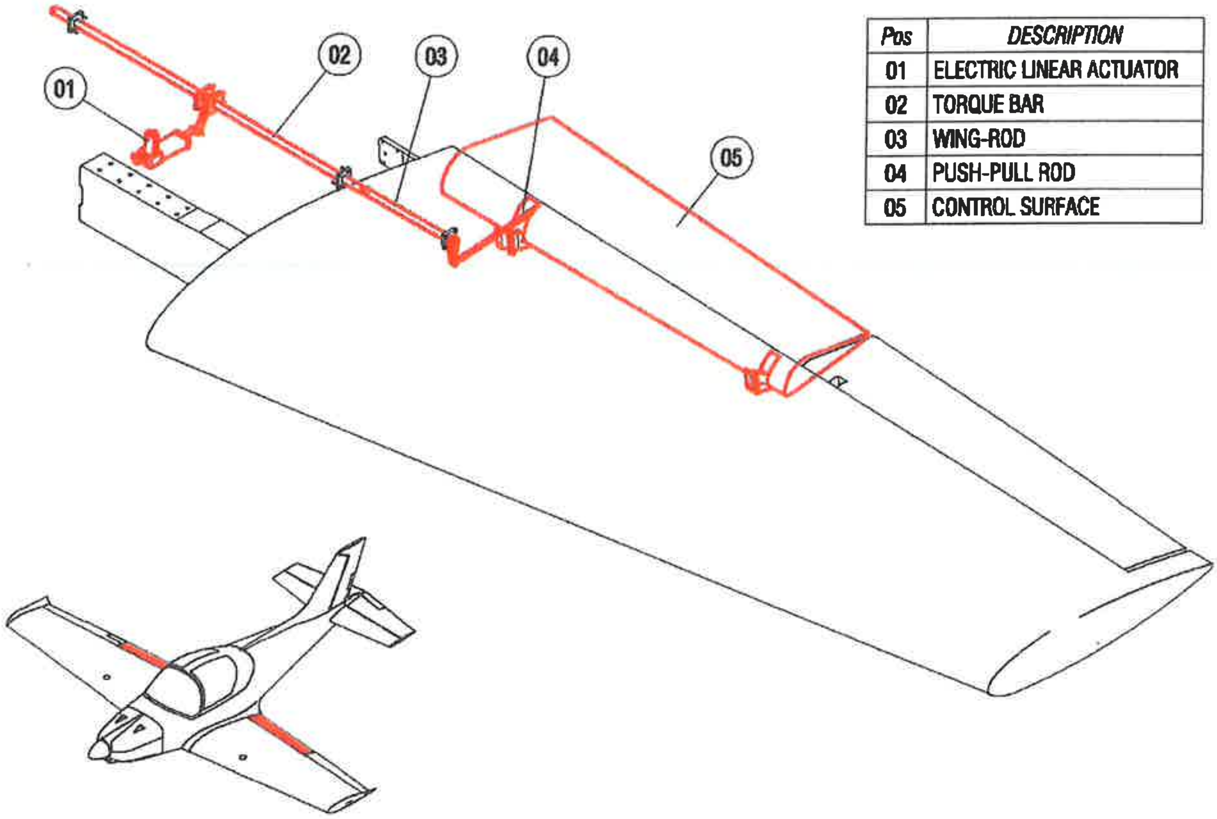
Elevator control system: The elevator control system consists of a closed loop of steel cables running between the control sticks and the aft relay belcrank. There is a single push pull rod connecting the aft relay belcrank to the elevators.



Pos	DESCRIPTION
01	STICK
02	ELEVATOR STEEL CABLE
03	RELAY
04	PUSH-PULL ROD
05	ACTUATION LEVER
06	CONTROL SURFACE

Picture 14: Elevator control system

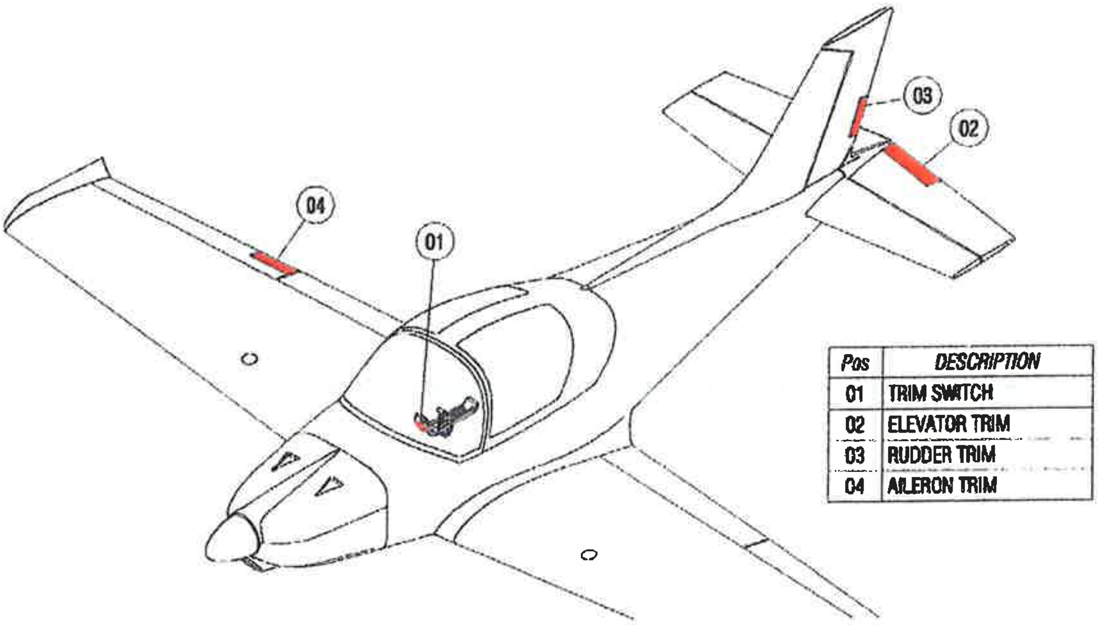
Flap control system: The flaps are simultaneously actuated by an electromechanical actuator motor which is electronically controlled by the pilot using a special switch. Configuration includes a flap computer that permits setting the flaps in steps at pre-configured values.



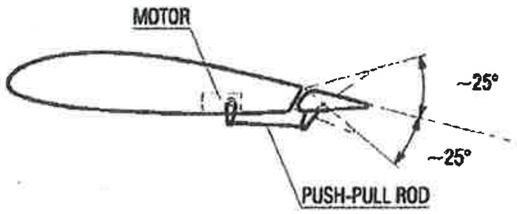
Pos	DESCRIPTION
01	ELECTRIC LINEAR ACTUATOR
02	TORQUE BAR
03	WING-ROD
04	PUSH-PULL ROD
05	CONTROL SURFACE

Picture 15: Flap control system

Trim control system: The aircraft is equipped with two trims in the standard configuration while a third one (rudder) may be installed as an option. All the trim tabs are actuated by an electrical push pull actuator controlled by the pilot through a small switch located in the center tunnel inside the cockpit



Pos	DESCRIPTION
01	TRIM SWITCH
02	ELEVATOR TRIM
03	RUDDER TRIM
04	AILERON TRIM



Picture 16: Trim control system

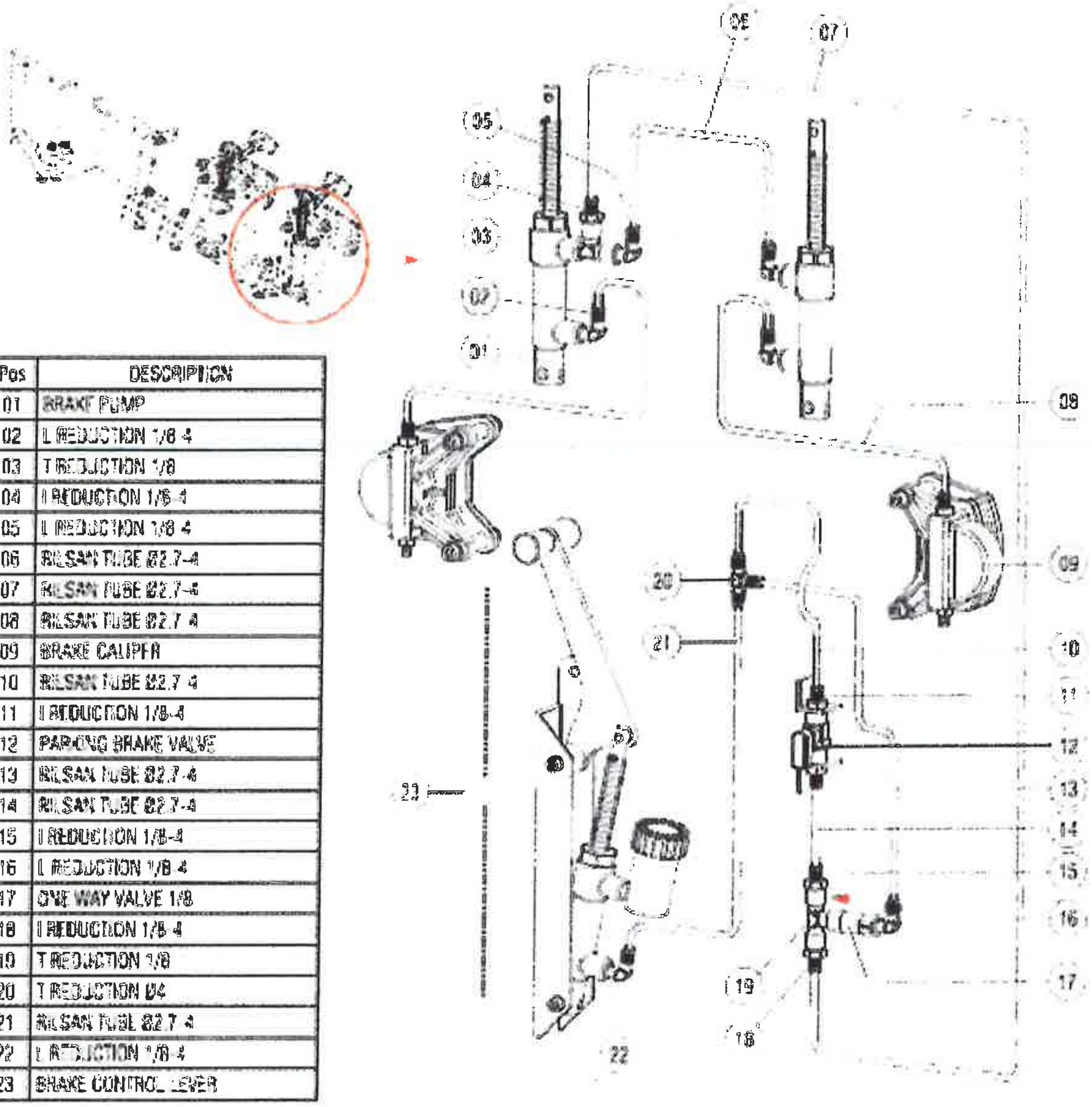
All the controls except the trims and the throttle are dual configuration for the pilot and the passenger.

7.4 *Braking System*

The braking system shown below refers to the toe brake control configuration inside the cockpit.

The system allows individual control of the brakes through the toe brakes located only on the left rudder pedals and also allows simultaneously locking of both brakes using the locking valve [12] inside the cockpit.

Additionally, the system includes a T-handle in the center console [23] which permits the co-pilot to apply braking either singly or simultaneously with the toe brakes.



Pos	DESCRIPTION
01	BRAKE PUMP
02	L REDUCTION 1/8-4
03	T REDUCTION 1/8
04	I REDUCTION 1/8-4
05	L REDUCTION 1/8-4
06	RILSAN TUBE Ø2.7-4
07	RILSAN TUBE Ø2.7-4
08	RILSAN TUBE Ø2.7-4
09	BRAKE CALIPER
10	RILSAN TUBE Ø2.7-4
11	I REDUCTION 1/8-4
12	PARKING BRAKE VALVE
13	RILSAN TUBE Ø2.7-4
14	RILSAN TUBE Ø2.7-4
15	I REDUCTION 1/8-4
16	L REDUCTION 1/8-4
17	ONE WAY VALVE 1/8
18	I REDUCTION 1/8-4
19	T REDUCTION 1/8
20	T REDUCTION 1/4
21	RILSAN TUBE Ø2.7-4
22	L REDUCTION 1/8-4
23	BRAKE CONTROL LEVER

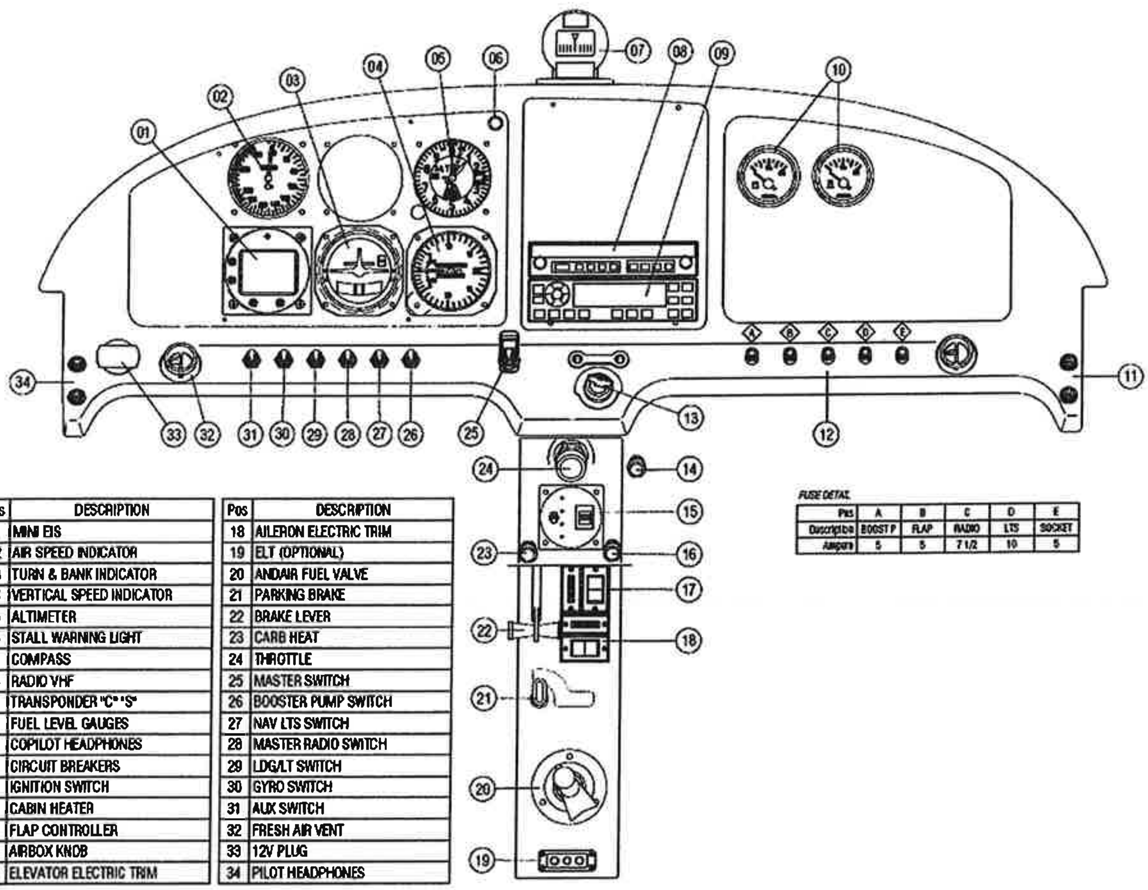
Picture 17: Braking system layout

7.5 *COCKPIT*

7.5.1 Instrument panel

The instrument panel contains all flight, navigation, and engine instruments that are required for V.F.R. operations. See Manufacturer's instructions regarding operation of equipment installed in the instrument panel.

The overview of instrument panel layout is represented in Picture 18 while details follow in the next paragraphs.



Pos	DESCRIPTION
01	MINI EIS
02	AIR SPEED INDICATOR
03	TURN & BANK INDICATOR
04	VERTICAL SPEED INDICATOR
05	ALTIMETER
06	STALL WARNING LIGHT
07	COMPASS
08	RADIO VHF
09	TRANSPONDER "C" "S"
10	FUEL LEVEL GAUGES
11	COPILOT HEADPHONES
12	CIRCUIT BREAKERS
13	IGNITION SWITCH
14	CABIN HEATER
15	FLAP CONTROLLER
16	AIRBOX KNOB
17	ELEVATOR ELECTRIC TRIM

Pos	DESCRIPTION
18	AILERON ELECTRIC TRIM
19	ELT (OPTIONAL)
20	ANDAIR FUEL VALVE
21	PARKING BRAKE
22	BRAKE LEVER
23	CARB HEAT
24	THROTTLE
25	MASTER SWITCH
26	BOOSTER PUMP SWITCH
27	NAV LTS SWITCH
28	MASTER RADIO SWITCH
29	LDG/LT SWITCH
30	GYRO SWITCH
31	AUX SWITCH
32	FRESH AIR VENT
33	12V PLUG
34	PILOT HEADPHONES

FUSE DETAIL

Pos	A	B	C	D	E
Discriptiba	BOOST P	FLAP	RADIO	LTS	SOCKET
Ampere	5	5	7 1/2	10	5

Picture 18: Standard Instrument panel layout

7.5.2 Cabin heat

Hot air for heating the cabin is supplied by a heat exchanger located around the engine muffler. Hot air enters the cabin through opening in the instrument panel (see bullet [31] in Picture 18). Heating is controlled by pulling the "Cabin Heater" control fully out for heat or by pushing the control fully in to turn the heat off.

7.5.3 Flight instruments

Flight instrument are located as usual on the left side of instrument panel and do respect the classic layout. The installation leaves a blind hole in order to install an additional flight instrument in the future. The standard installed instruments are illustrated in Picture 18 and listed in paragraph 6.1.1.

7.6 *BAGGAGE AND CARGO COMPARTMENT*

The standard aircraft has two zippered cargo compartments located behind the seats. All baggage must be stowed inside these areas. When in flight, the zippers must be properly closed using the dedicated locks, see picture below.

Picture 19: Baggage compartment

7.7 *Powerplant*

7.7.1 Engine & engine mount

The aircraft is powered by a Rotax® 912ULS 4 cylinder engine. This engine has air cooled cylinders, liquid cooled cylinder heads with an integrated water pump and expansion tank. This powerplant is capable of delivering up to 100 hp for takeoff (5 minutes) and a maximum continuous power of 95 hp. A throttle controls the power of the engine.

The throttle is located in the middle of control panel to permit both pilots access (see bullet 13 in Picture 18).

Cold engine start up is simplified by the use of the choke control (see bullet [23] in Picture 18). The choke is activated by pulling the control and deactivated by pushing. The throttle must be fully closed during use of the choke!

The engine mount structure is made of high-strength steel and the engine is attached to the engine mount through rubber mounts that help reduce vibration.

7.7.2 Propeller

The standard aircraft comes with a composite three blade propeller. This propeller was found by the OEM to have a "constant speed" effect.

The blades are manufactured of carbon plies and is designed to obtain maximum strength in torsion and bending. The constant speed effect is not dependent on blade distortion but rather on its geometry and its particular profile.

This propeller also has a leading edge shield made of Inconel material to protect it from damage by stones other materials that can scratch the outer surface and the structure.

7.7.3 ENGINE COWLING

The engine cowling is made of composite materials. The upper cowl can be removed using Philips-head fasteners. There is an oil access door located in the upper, right-hand portion that allows easy access to the oil fill neck/dip stick, making removal of the cowl unnecessary during pre-flight inspections.

The lower cowl is attached to the fuselage frame but is easily removed for any necessary maintenance (see Maintenance Manual for more details).

7.7.4 EXHAUST/MUFFLER SYSTEM

The exhaust system is made of stainless steel. Muffler is also covered with a shroud that is used as a heat exchanger to draw hot air for the cabin and for the carburetors as well.

7.7.5 IGNITION SYSTEM

The engine has a self-sustaining dual-electronic ignition system that does not require power from the battery to run. Each of the two ignition systems is powered by independent, stationary generating coils located on the ignition housing behind the flywheel.

The coils are excited by magnets permanently mounted in the flywheel.

Aside from the flywheel, which is mounted directly to the crankshaft, there are no moving parts to wear out in this ignition system: no gears, belts, seals, or bearings.

A third set of independent coils provide alternating current (AC) to an external rectifier-regulator that converts it to 14-volt direct current (DC) and regulates the amperage delivered to the battery, based on demand.

Expect a maximum output of approximately 18 amps at max rated power and 14 amps under continuous power setting.

7.7.6 AIR INDUCTION SYSTEM

Induction air for the carburetors is pulled thought the air filter located in the airbox (air plenum), which is located near the upper left side of the engine installation.

Air temperature inside the airbox and therefore to the carburetors is managed by the same heat exchanger used to heat the cabin by pulling the hot air coming from the heat exchanger inside the airbox.

The control for carburetor heat is located on the instrument panel as shown by bullet [22] in Picture 18.

7.7.7 ELECTRICAL SYSTEM

The main sources of electrical energy are a 12 volt DC battery and a 14 volt DC alternator (14 amps continuous, 18 amps at full engine power).

The system has over voltage protection and an integral voltage regulator. The main battery is located inside the engine cowling and located on the firewall.

The relevant electric powered devices get their direct power through the circuit breakers.

Breakers are listed in Picture 18 with their current rate and the label that associates each one with the devices that are operated by each of them:

Breaker (see. Picture 18)	Applicable device	Current rate (A)
A	This breaker manages the power supply to the fuel booster pump	5
B	This breaker manages the power supply to the Flap actuator	5
C	This breaker manages the power supply to the Radio	7.5
D	This breaker manages the power supply to all the lights	10
E	This breaker manages the power supply to the cockpit 12V socket	5

Table 62: Summary of breakers

7.7.8 LIGHTS

Anti-collision light assemblies may be installed on each wingtip. These consist of a navigation light and a strobe. A landing light package is also installed on the aircraft's lower engine cowling.

7.7.9 STALL WARNING

The stall warning system can be optionally installed and is activated by a vane located on the leading edge of the left wing. As the aircraft approaches the stall, a horn will sound.

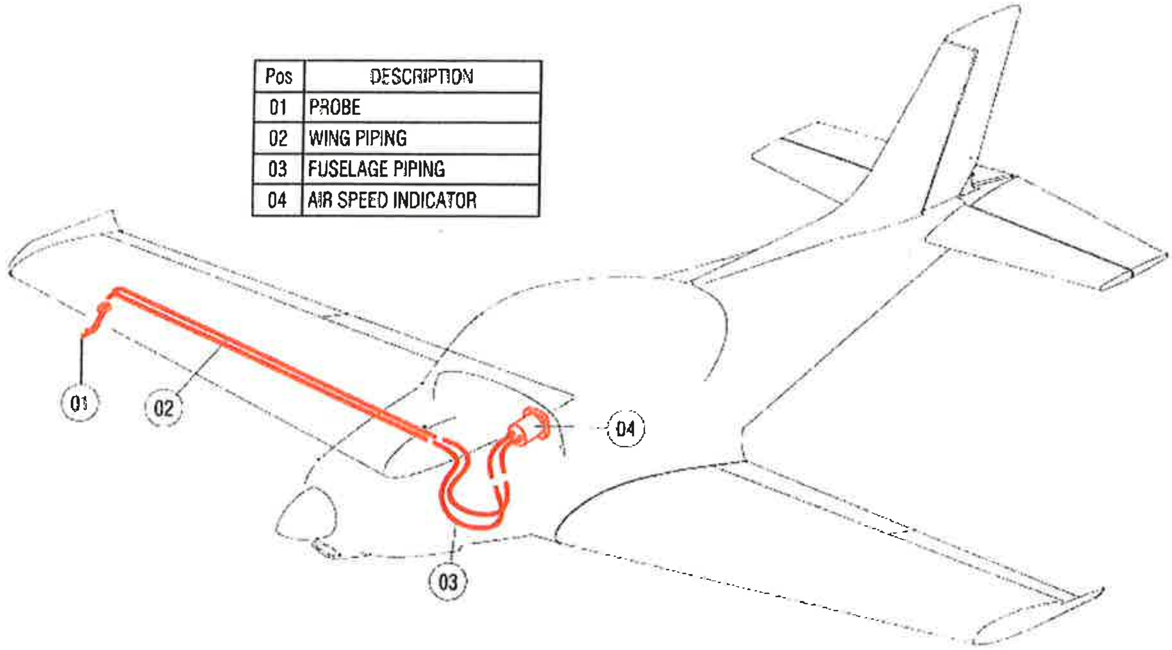
The system is calibrated so that the horn will come on at least 3-5 Kts above the stall speed.

7.7.10 PITOT-STATIC SYSTEM

The Pitot system senses dynamic pressure through an aluminium tube that is aligned with the flow of air and is located under the leading edge of the right wing. The pitot installation and layout is described in Picture 20.

The static pressure source for each instrument is derived by an additional aluminium tube with a set orifice used to measure only static pressure and not dynamic pressure.

Because of this, the indications for airspeed, altitude, and rate of climb are not affected by opening the windows, door, or cabin air vents.



Picture 20: Pitot probe installation and pipes layout.

7.7.11 OIL SYSTEM

The oil system is an integral part of the engine, except for the cooler that is mounted on the top right (pilot view) of the engine cooling plenum, above the engine. The oil filler is on the right side of the engine too.

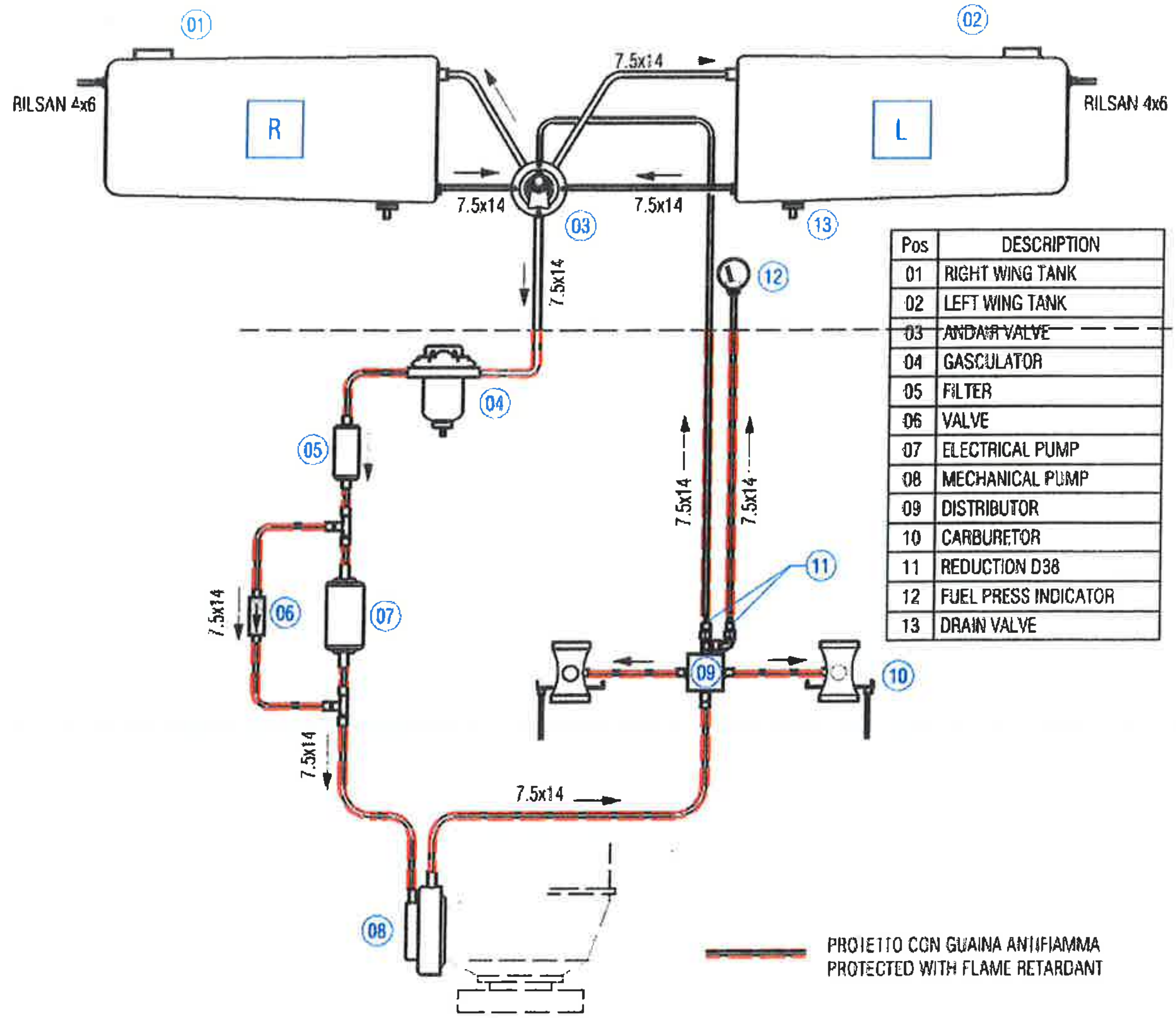
7.8 *Fuel System*

The system is equipped with two fuel tanks [1] [2] integrated within the wing leading edge. In the cabin, between the two pilots, there is a fuel valve [3]; The fuel flows from this valve to the gascolator [4]which contains both a strainer screen and a drain valve. From the gascolator, the fuel passes through a second filter [5] and an electric booster pump[7], an engine-driven pump [8] and then through a distribution fitting and then to the carburetors [10].

The emergency electric pump [7] provides the fuel flow in case of mechanical failure (or in all conditions where it is required).

Excess fuel is routed back to the fuel valve [3] and from there is returned to the tank in use. Each tank is vented to balance the internal pressure.

Each fuel tank is equipped with individual floats-sensor that measure the fuel level, and are connected with the gauge located on the panel. A pressure indicator [12] on instrument panel, is also connected to the fuel line.



Pos	DESCRIPTION
01	RIGHT WING TANK
02	LEFT WING TANK
03	ANDAIR VALVE
04	GASCULATOR
05	FILTER
06	VALVE
07	ELECTRICAL PUMP
08	MECHANICAL PUMP
09	DISTRIBUTOR
10	CARBURETOR
11	REDUCTION D38
12	FUEL PRESS INDICATOR
13	DRAIN VALVE

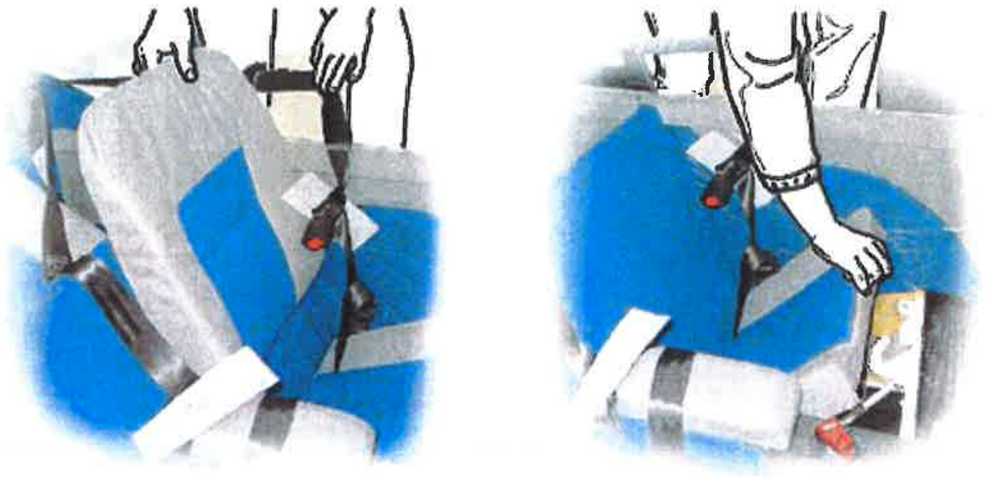
Picture 21: Fuel system layout

Fuel drains are located just underneath the fuel tanks and are accessible from the lower wing leading edge as illustrated below. Draining can simply be done when necessary by using standard Aircraft Fuel Testers.

Picture 22: Main tank draining

7.9 *Safety devices*

The pilot and the passenger seats are equipped with a four point seat belt system that has been proven to be well designed and suitable for use in Light Aircraft. The safety belts attach points can be accessed in the cockpit by removing the seat upholstery (see Picture 23). The belts are simple to adjusted to the pilot and passenger sizes using the integrated straps.



Picture 23: Removing the seats

7.10 *Miscellaneous placards and markings*

Miscellaneous placards inside and outside the cockpit are illustrated in Annex D.

8 HANDLING AND SERVICING

WARNING

NEVER HANDLE FUEL IN AN ENCLOSED AREA OR WHERE FUMES COULD REACH AN IGNITION POINT. DO NOT SMOKE OR ALLOW OPEN FLAMES OR SPARKS IN THE PROXIMITY. NEVER ADD FUEL WHILE ENGINE IS RUNNING.

WARNING

NEVER REFUEL AN AIRCRAFT IF FUEL COULD BE SPILLED ON HOT ENGINE COMPONENTS.

WARNING

USE ONLY APPROVED FUEL CONTAINERS AND NEVER TRANSPORT FUEL IN AN UNSAFE MANNER.

WARNING

ALWAYS CHECK FOR FUEL CONTAMINATION. CONTAMINATION IS A MAJOR CAUSE OF ENGINE FAILURE. THE BEST PLACE TO AVOID CONTAMINATION IS AT THE SOURCE. ONCE YOUR FUEL IS IN THE CONTAINER A VERY HAZARDOUS POTENTIAL EXISTS. USE A CLEAN SAFETY APPROVED STORAGE CONTAINER. DO NOT OVERFILL THE CONTAINER - ALLOW FOR EXPANSION.

WARNING

THE ENGINE IS DESIGNED FOR USE WITH UNLEADED MOGAS HAVING AN OCTANE RATING OF 90 RON OF HIGHER. USE AVIATION GASOLINE ONLY FOR SHORT PERIODS AND INSPECT FREQUENTLY FOR CYLINDER DEPOSITS. BE SURE TO USE PRODUCTS OF AT LEAST THE STANDARD SHOWN IN SECTION 1.

WARNING

ALWAYS GROUND THE AIRCRAFT THROUGH THE EXHAUST PIPE BEFORE REMOVING THE FUEL CAP.

WARNING

BEFORE THE FIRST FLIGHT OF THE DAY, AND AFTER EACH REFUELING, USE A SAMPLER CUP AND DRAIN A SMALL QUANTITY OF FUEL FROM THE FUEL TANK SUMP QUICK DRAIN VALVE - CHECK FOR WATER, SEDIMENT AND CONTAMINATION.

8.1 *Servicing fuel, oil and coolant*

8.1.1 Approved fuel, oil and fluids

The following fuel, oil and coolant are approved for use in the aircraft:

1) Approved Engine coolant: *Inugel Optimal Ultra* (it conforms to ASTM D3306) or equivalent;
2) Approved Engine oil: 4-stroke motorcycle oil with gear additives and *"SF" or "SG" API classification*, The "GL4" or "GL5" specification is recommended;
3) Approved Brake oil: *Motul 7100 10W60* or equivalent;
4) Approved Fuel: *98 Octane or greater - 90 RON or greater* or *100 LL* or *100/130 grade aviation gasoline*.

8.1.2 Fuel System Water Drainage

Where there is a suspicion that water may be present in the fuel tank, the following procedure is to be followed:

- Leave the aircraft stopped (at least 8 hr) to permit water to drop down to the lowest fuel tank area;

- Check fuel tank sump by sampling fuel;

- If water is present, repeat the entire procedure until you are certain that no water remains in the tank or fuel system;
- Drain Gascolator as indicated in the Maintenance Manual.

Where doubt still exists, the aircraft fuel system and carburetors should be examined by a qualified person and fully stripped and drained before flight.

8.1.3 Care when Filling the Tank

When fueling from a pump to a full tank condition, lift the nozzle out slightly for the last 4 liters (1 gallon) and slow the filling speed.

If you do not do this, it is possible to create a siphon in the vent which will dump the last 4 liters (1 gallon) until the vent is above the fuel level.

If this happens, quickly fit the fuel cap and to break the siphon rock the aircraft in an attempt to uncover the vent in the tank.

Please refer to the Annex FTS5.

NOTE

The fuel gauges read FULL until the first 15 liters (4 gallon) of each tank have been used.

8.1.4 Fuel Tank Selection

A vapor return line is installed which bleeds back a small flow of fuel from the engine compartment to the tank in use.

8.2 *Towing, tie down & parking*

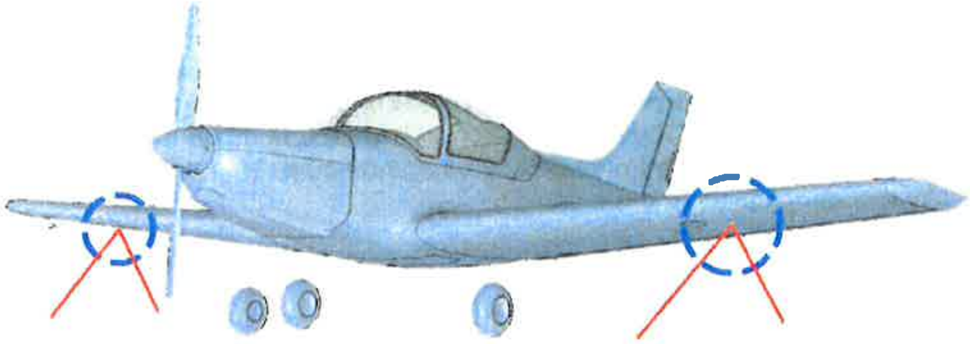
Whenever the aircraft needs to be parked or tied down, the following checks are required:

ITEM	DEVICE	VALUE
1	Radio/Intercom	OFF
2	Ignition Switches	OFF
3	Master Switch	OFF
4	Controls	LOCK with seatbelt
5	Fuel	OFF

Table 63: Final securing procedure

8.2.1 Tie down

Tie down points are located under the wing, use them in order to attach the aircraft to the ground using belts or ropes.

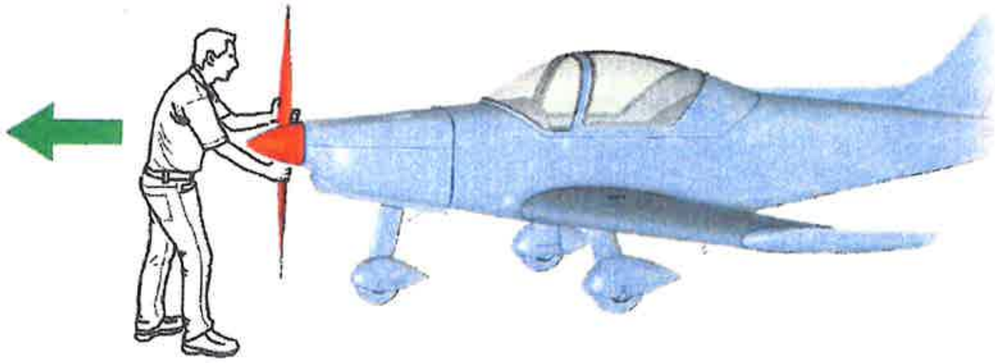


Picture 24: Tie down the aircraft

8.2.2 Towing

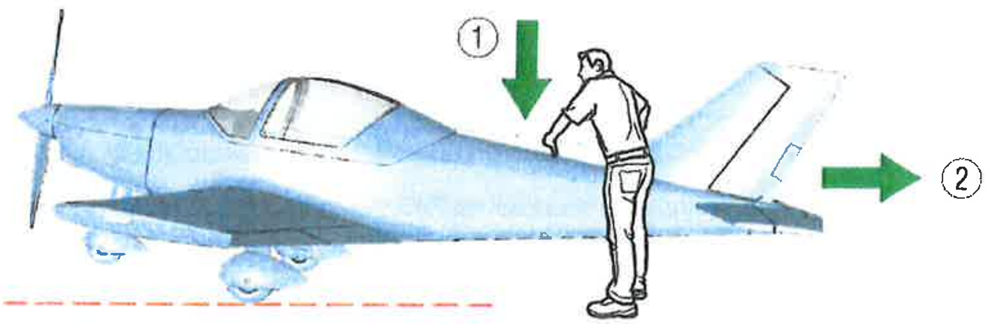
The aircraft can be towed pulling it by the propeller. Never push it by the tail surface or the tail cone.

When pulling by the propeller, the nose wheel will rotate freely following the direction decided by the pilot.



Picture 25: Towing the aircraft

When/if backwards movements are required, lower the tail, raising the nose wheel and then pull the aircraft backward or turn it as necessary.



Picture 26: Backward pulling/rotating

8.2.3 Taxiing

When taxiing, it is important that speed and use of brakes be minimized and that all controls be utilized to maintain directional control and balance. The carburetor heat control knob should be pushed fully IN (that is, NOT selected) during all ground operations unless heat is absolutely necessary. Taxiing over loose gravel or cinders should be done at low engine speed to avoid abrasion and stone damage to the propeller.

NOTE

DO NOT accelerate over loose gravel or cinders or propeller damage will result.

8.3 *Visible Moisture*

Where flights are likely to include operations in visible moisture or rain, the use of window treatment is recommended.

8.4 *Starting the Engine from External Power Source*

Plug the Alpi Aviation standard connector under the cowl port side. Ensure red wire to positive and black to negative in the external power unit. Start as for normal operation. Be careful about the propeller while removing the external plug.

CAUTION

WHEELS MUST BE CHOCKED. BRAKES MUST BE ON. FACE AIRCRAFT INTO WIND. ENSURE PROPELLER IS CLEAR. ENSURE QUALIFIED PERSON IS IN THE PILOT'S SEAT.

8.5 *Aircraft cleaning & care*

8.5.1 Exterior

Use mild automotive soap for washing the exterior of the aircraft. The windows and windshield can be cleaned using Zep Foaming Glass Cleaner (or equivalent).

For the canopy only use the product C32 & S23 Avioclean (or equivalent) that is delivered with the "Welcome on board kit" supplied with the aircraft.

For the engine cowling or the oil & exhaust dust only use the product E58 Avioclean (or equivalent) that is delivered with the "Welcome on board kit" supplied with the aircraft.

For the propeller cleaning only use the product P47 Avioclean (or equivalent) that is delivered with the "Welcome on board kit" supplied with the aircraft.

8.5.2 Interior

A damp rag is typically adequate for cleaning the interior of the aircraft. The windows and windshield can be cleaned using Zep Foaming Glass Cleaner.

For the canopy only use the product C32 Avioclean (or equivalent) that is delivered with the "Welcome on board kit" supplied within the aircraft.

8.6 *Propeller Care*

Full throttle run up over loose gravel is especially harmful to propeller tips. When takeoffs must be made over a gravel surface, it is very important that the throttle is advanced slowly. This allows the aircraft to start rolling before high RPM is developed, and the gravel will be blown behind the propeller rather than pulled into it. When unavoidable small nicks appear in the propeller, they should be immediately corrected.

All the strength of a composite propeller (if installed) lies in its skin. If this skin is damaged significantly, i.e. fibers of carbon are broken, then the propeller must not be used until the blade is replaced and the propeller rebalanced. This kind of fiber damage cannot be restored.

9 SUPPLEMENTS

9.1 *Conversion tables*

km/h	kts	m/s	km/h	kts	m/s	km/h	kts	m/s
1,853	1	0,37	63,00	34	18,34	124,16	67	36,15
3,706	2	1,07	64,86	35	18,88	126,01	68	36,69
5,560	3	1,61	66,71	36	19,42	127,87	69	37,23
7,413	4	2,15	68,56	37	19,96	129,72	70	37,77
9,266	5	2,69	70,42	38	20,50	131,57	71	38,31
11,11	6	3,23	72,27	39	21,04	133,43	72	38,86
12,97	7	3,77	74,12	40	21,58	135,28	73	39,39
14,82	8	4,31	75,98	41	22,12	137,13	74	39,93
16,67	9	4,85	77,83	42	22,66	198,99	75	40,47
18,53	10	5,39	79,68	43	23,20	140,84	76	41,01
20,38	11	5,93	81,54	44	23,74	142,69	77	41,54
22,23	12	6,47	83,39	45	24,28	144,55	78	42,08
24,09	13	7,01	85,24	46	24,82	146,40	79	42,62
25,94	14	7,55	87,10	47	25,36	148,25	80	43,16
27,79	15	8,09	88,95	48	25,90	150,10	51	43,70
29,65	16	8,63	90,80	49	26,44	151,96	82	44,24
31,50	17	9,17	92,66	50	26,98	153,81	83	44,78
33,35	18	9,71	94,51	51	27,52	155,66	84	45,32
35,21	19	10,25	96,36	52	28,05	157,52	85	45,86
37,06	20	10,79	98,22	53	28,59	159,37	86	46,40
38,91	21	11,33	100,07	54	29,13	161,22	87	46,94
40,77	22	11,81	101,92	55	29,67	163.08	88	47,48
42,62	23	12,41	103,77	56	30,21	164,93	89	48,02
44,47	24	12,95	105,63	57	30,75	166,78	90	48,56
46,33	25	13,49	107,48	58	31,29	168,64	91	49,10
48,18	26	14,03	109,33	59	31,83	170,49	92	49,64
50,03	27	14,56	111,19	60	32,37	172,34	93	50,18
51,80	28	15,10	113,04	61	32,91	174,20	94	50,12
53,74	29	15,64	114,89	62	33,45	176,05	95	51,26
55,59	30	16,18	116,75	63	33,99	177,90	96	51,80
57,44	31	16,72	118,60	64	34,53	179,76	97	52,34
59,30	32	17,26	120,45	65	35,07	181,61	98	52,88
61,15	33	17,80	122,31	66	35,61	183,46	99	53,42

Table 64: Kilometers per hour (km/h) - knots (kts) - meters per sec. (m/s)

m/sec.		100 ft/min	m/sec.		100 ft/min	m/sec.		100 ft/min
0,50	1	1,96	10,66	21	41,33	20,82	41	80,70
1,01	2	3,93	11,17	22	43,30	21,33	42	82,67
1,52	3	5,90	11,68	23	45,27	21,84	43	84,64
2,03	4	7,87	12,19	24	47,24	22,35	44	86,61
2,54	5	9,84	12,75	25	49,21	22,86	45	88,58
3,04	6	11,81	13,20	26	51,18	23,36	46	90,53
3,55	7	13,78	13,71	27	53,15	23,87	47	92,52
4,06	8	15,74	14,22	28	55,11	24,38	48	94,48
4,57	9	17,71	14,73	29	57,08	24,89	49	96,45
5,08	10	19,68	15,24	30	59,05	25,45	50	98,42
5,58	11	21,65	15,74	31	61,02	25,90	51	100,4
6.09	12	23,62	16,25	32	62,92	26,41	52	102,3
6,60	13	25,51	16.76	33	64,96	26,92	53	104,3
7,11	14	27,55	17,27	34	66,92	27,43	54	106,2
7,62	15	29,52	17,78	35	68,89	27,94	55	108,2
8,12	16	31,49	18,28	36	70,86	28,44	56	110,2
8,63	17	33,46	18,79	37	72,83	28,95	57	112,2
9,14	18	35,43	19,30	38	74,80	29,46	58	114,1
9,65	19	37,40	19,81	39	76,77	29,97	59	116,1
10,16	20	39,37	20,32	40	78,74	30,48	60	118,1

Table 65: Meters per second (m/s) - feet per minute (100 ft/min)

Altitude feet	Altitude metres	Temperature °C	Temperature °F	Relative pressure	Relative density	Cor. factors
-2.000	-610	18,96	66,13	1,074	1,059	0,971
-1	-305	16,98	62,56	1,036	1,029	0,985
0	0	15	59	1	1	1
1.000	305	13,01	55,43	0,964	0,971	1,014
2.000	610	11,03	51,86	0,929	0,942	1,029
3.000	914	9,056	48,30	0,896	0,915	1,045
4.000	1219	7,075	44,73	0,863	0,888	1,061
5.000	1524	5,094	41,16	0,832	0,861	1,077
6.000	1829	3,113	37,60	0,801	0,835	1,090
1.000	2134	1,132	34,03	0,771	0,810	1,110
8.000	2438	-0,850	30,47	0,742	0,785	1,128
9.000	2743	-2,831	26,90	0,714	0,761	1,145
10.000	3090	-4,812	23,33	0,687	0,738	1,163
11.000	3353	-6,793	19,77	0,661	0,715	1,182
12.000	3658	-8,774	16,20	0,635	0,693	1,201
13.000	3916	-10,75	12,64	0,611	0,671	1,220
14.000	4267	-12,73	9,074	0,587	0,649	1,240
15.000	4572	-14,71	5,507	0,564	0,629	1,260
16.000	4877	-16,69	1,941	0,541	0,608	1,281
17.000	5182	-18,68	-1,625	0,520	0,589	1,302

Table 66: temp., relative pres., relative dens., altitude CAS-TAS correction factors

metres (m)		feet (ft)	metres (m)		feet (ft)	metres (m)		feet (ft)
0,304	1	3,280	10,36	34	111,5	20,42	67	219,81
0,609	2	6,562	10,66	35	114,8	20,72	68	223,09
0,914	3	9,843	10,97	36	118,1	21,03	69	226,37
1,219	4	13,12	11,27	37	121,3	21,33	70	229,65
1,524	5	16,40	11,58	38	124,6	21,64	71	232,94
1,828	6	19,68	11,88	39	127,9	21,91	72	236,22
2,133	7	22,96	12,19	40	131,2	22,25	73	239,50
2,438	8	26,24	12,49	41	134,5	22,55	74	242,78
2,743	9	29,52	12,80	42	137,7	22,86	75	246,06
3,048	10	32,80	13,10	43	141,1	23,16	76	249,34
3,352	11	36,08	13,41	44	144,3	23,46	77	252,62
3,657	12	39,37	13,71	45	147,6	23,77	78	255,90
3,962	13	42,65	14,02	46	150,9	24,07	79	259,18
4,267	14	45,93	14,32	47	154,1	24,38	80	262,46
4,572	15	49,21	14,63	48	157,4	24,68	81	265,74
4,876	16	52,49	14,93	49	160,7	24,99	82	269,02
5,181	17	55,77	15,24	50	164,1	25,29	83	272,31
5,48	18	59,05	15,54	51	167,3	25,60	84	275,59
5,791	19	62,33	15,84	52	170,6	25,90	85	278,87
6,096	20	65,61	16,15	53	173,8	26,21	86	282,15
6,400	21	68,89	16,45	54	177,1	26,51	87	285,43
6,705	22	72,17	16,76	55	180,4	26,82	88	288,71
7,010	23	75,45	17,06	56	183,7	27,12	89	291,99
7,310	24	78,74	17,37	57	187,0	27,43	90	295,27
7,620	25	82,02	17,67	58	190,2	27,73	91	298,55
7,948	26	85,30	17,98	59	193,5	28,04	92	301,83
8,220	27	88,58	18,28	60	196,8	28,34	93	305,11
8,530	28	91,86	18,59	61	200,1	28,65	94	308,39
8,830	29	95,14	18,89	62	203,4	28,90	95	311,68
9,144	30	98,42	19,20	63	206,6	29,26	96	314,96
9,448	31	101,7	19,50	64	209,9	29,56	97	318,24
9,750	32	104,9	19,81	65	213,2	29,87	98	321,52
10,05	33	108,2	20,12	66	216,5	30,17	99	324,80

Table 67: Meters (m) to feet (ft) conversion table

altitude (m)	pressure (hPa)	pressure (inch Hg)	altitude (m)	pressure (hPa)	pressure (inch Hg)
-1000	1139,3	33,6	1300	866,5	25,6
-950	1132,8	33,5	1350	861,2	25,4
-900	1126,2	33,3	1400	855,9	25,3
-850	1119,7	33,1	1450	850,7	25,1
-800	1113,2	32,9	1500	845,5	25,0
-750	1106,7	32,7	1550	840,3	24,8
-700	1100,3	32,5	1600	835,2	24,7
-650	1093,8	32,3	1650	830	24,5
-600	1087,5	32,1	1700	824,9	24,4
-550	1081,1	31,9	1750	819,9	24,2
-500	1074,3	31,7	1800	814,8	24,1
-450	1068,5	31,6	1850	809,8	23,9
-400	1062,3	31,4	1900	804,8	23,8
-350	1056,0	31,2	1950	799,8	23,6
-300	1049,8	31,0	2000	794,9	23,5
-250	1043,7	30,8	2050	790,0	23,3
-200	1037,5	30,6	2100	785,1	23,2
-150	1031,4	30,5	2150	780,2	23,0
-100	1025,3	30,3	2200	775,3	22,9
-50	1019,3	30,1	2250	770,5	22,8
0	1013,3	29,9	2300	165,7	22,6
50	1007,3	29,7	2350	760,9	22,5
100	1001,3	29,6	2400	756,2	22,3
150	995,4	29,4	2450	751,4	22,2
200	989,4	29,2	2500	746,7	22,1
250	983,6	29,0	2550	742,1	21,9
300	977,7	28,9	2600	737,4	21,8
350	971,9	28,7	2650	732,8	21,6
400	966,1	28,5	2700	728,2	21,5
450	960,3	28,4	2750	723,6	21,4
500	954,6	28,2	2800	719	21,2
550	948,9	28,0	2850	714,5	21,1
600	943,2	27,9	2900	709,9	21,0
650	937,5	27,7	2950	705,5	20,8
700	931,9	27,5	3000	701,0	20,7
750	926,3	27,4	3050	696,5	20,6
800	920,0	27,2	3100	692,1	20,4
850	915,2	27,0	3150	687,7	20,3
900	909,0	26,9	3200	683,3	20,2
950	904,2	26,7	3250	679,0	20,1
1000	898,7	26,5	3300	674,6	19,9
1050	893,3	26,4	3350	670,3	19,8

Table 68: air pressure as related to altitude

h (m)	h (ft)	T (°C)	T (°K)	T/T_0	p (mmHg)	p (kg/m²)	p/p_0	r (kgs²/m⁴)	g (kg/m⁴)	d	1/S d	V_s	n*10⁶ (m²/s)
-1000	-3281	21,5	294,5	1,022	854,6	11619	1,124	0,137	1,347	1,099	0,957	344,2	13,4
-900	-2953	20,8	293,8	1,020	844,7	11484	1,111	0,136	1,335	1,089	0,958	343,9	13,5
-800	-2625	20,2	293,2	1,018	835	11351	1,098	0,134	1,322	1,079	0,962	343,5	13,6
-700	-2297	19,5	292,5	1,015	825,3	11220	1,085	0,133	1,310	1,069	0,967	343,1	13,7
-600	-1969	18,9	291,9	1,013	815,7	11090	1,073	0,132	1,297	1,058	0,971	342,7	13,8
-500	-1640	18,2	291,2	1,011	806,2	10960	1,060	0,131	1,285	1,048	0,976	342,4	13,9
400	-1312	17,6	290,6	1,009	796,8	10832	1,048	0,129	1,273	1,039	0,981	342	14,0
300	-984	16,9	289,9	1,006	787,4	10705	1,036	0,128	1,261	1,029	0,985	341,6	14,1
200	-656	16,3	289,3	1,004	779,2	10580	1,024	0,127	1,249	1,019	0,990	341,2	14,3
100	-328	15,6	288,6	1,002	769,1	10455	1,011	0,126	1,237	1,009	0,995	340,9	14,4
0	0	15	288	1	760	10332	1	0,125	1,225	1	1	340,5	14,5
100	328	14,3	287,3	0,997	751,0	10210	0,988	0,123	1,213	0,990	1,004	340,1	14,6
200	656	13,7	286,7	0,995	742,2	10089	0,976	0,122	1,202	0,980	1,009	339,7	14,7
300	984	13,0	286,0	0,993	133,4	9970	0,964	0,121	-1,191	0,971	1,014	339,3	14,8
400	1312	12,4	285,4	0,991	724,6	9852	0,953	0,120	1,179	0,962	1,019	338,9	14,9
500	1640	11,1	284,7	0,988	716,0	9734	0,942	0,119	1,167	0,952	1,024	338,5	15,1
600	1969	11,1	284,1	0,986	707,4	9617	0,930	0,117	1,156	0,943	1,029	338,1	15,2
700	2297	10,4	283,4	0,984	699,0	9503	0,919	0,116	1,145	0,934	1,034	337,8	15,3
800	2625	9,8	282,8	0,981	690,6	9389	0,908	0,115	1,134	0,925	1,039	337,4	15,4
900	2953	9,1	282,1	0,979	682,3	9276	0,897	0,114	1,123	0,916	1,044	337	15,5
1000	3281	8,5	281,5	0,977	674,1	9165	0,887	0,113	1,112	0,907	1,049	336,6	15,7
1100	3609	7,8	280,8	0,975	665,9	9053	0,876	0,112	1,101	0,898	1,055	336,2	15,8
1200	3937	7,2	280,2	0,972	657,9	8944	0,865	0,111	1,090	0,889	1,060	335,8	15,9
1300	4265	6,5	279,5	0,970	649,9	8835	0,855	0,110	1,079	0,880	1,065	335,4	16,0
1400	4593	5,9	278,9	0,968	642,0	8728	0,844	0,109	1,069	0,872	1,070	335	16,2
1500	4921	5,2	278,2	0,966	634,2	8621	0,834	0,107	1,058	0,863	1,076	334,7	16,3
1600	5249	4,6	277,6	0,963	626,4	8516	0,824	0,106	1,048	0,855	1,081	334,3	16,4
1700	5577	3,9	276,9	0,961	618,7	8412	0,814	0,106	1,037	0,846	1,086	333,9	16,6
1800	5905	3,3	276,3	0,959	611,2	8309	0,804	0,104	1,027	0,838	1,092	333,5	16,7
1900	6234	2,6	275,6	0,957	603,7	8207	0,794	0,103	1,017	0,829	1,097	333,1	16,9
2000	6562	2	275	0,954	596,2	8106	0,784	0,102	1,006	0,821	1,103	332,7	17,0
2100	6890	1,3	274,3	0,952	588,8	8005	0,774	0,101	0,996	0,813	1,108	332,3	17,1
2200	7218	0,7	273,7	0,950	581,5	7906	0,765	0,100	0,986	0,805	1,114	331,9	17,3
2300	7546	0,0	273,0	0,948	574,3	7808	0,755	0,099	0,976	0,797	1,120	331,5	17,4
2400	7874	-0,6	272,4	0,945	576,2	7710	0,746	0,098	0,967	0,789	1,125	331,1	17,6
2500	8202	-1,2	271,7	0,943	560,1	7614	0,736	0,097	0,957	0,781	1,131	330,7	17,7
2600	8530	-1,9	271,1	0,941	553,1	7519	0,727	0,096	0,947	0,773	1,137	330,3	17,9
2700	8858	-2,5	270,4	0,939	546,1	7425	0,718	0,095	0,937	0,765	1,143	329,9	18,0
2800	9186	-3,2	269,8	0,936	539,3	7332	0,709	0,094	0,928	0,757	1,149	329,6	18,2
2900	9514	-3,8	269,1	0,934	532,5	7239	0,700	0,093	0,918	0,749	1,154	329,2	18,3

Table 69: ICAO standard atmosphere

9.2 *Operation of Optional Equipment or Accessories*

Refer to the applicable Operational Sheet released by Alpi Aviation based on the actual aircraft configuration. Detailed instructions supplied from the OEM are enclosed in the OEM Documentation package and delivered together with the Aircraft.

9.3 *Aircraft Flight Training Supplement*

The information herein listed completes those included in the above paragraphs and illustrates the additional information that help the owner to use the aircraft and to manage it when on the ground and when in flight.

This supplement will list all the main ground and flight actions that are assumed to be relevant from the aircraft's use point of view, and will complement the information already listed in this POH.

9.3.1 Additional information for Ground procedures

The following paragraphs describe the operational procedures used to instruct the owner in regard to ground operations.

9.3.1.1 Where to fit the POH & MAINTENANCE MANUAL

POH, with integrated CHECK LIST and MAINTENANCE MANUAL with integrated maintenance LOGBOOK must be always be located inside the aircraft, inside the 2nd baggage bay, see Picture 19.

9.3.1.2 How to close-lock & open the canopy

Please refer to the Operational Sheet attached in Annex FTS1.

9.3.1.3 How to board/descend in/from the aircraft

Please refer to the Operational Sheet attached in Annex FTS2.

9.3.1.4 How to adjust, fasten and unfasten the seatbelts

Please refer to the Operational Sheet attached in Annex FTS3.

9.3.1.5 How to use cockpit control/devices

Please refer to the Operational Sheet attached in Annex FTS4.

9.3.1.6 How to refuel

Please refer to the Operational Sheet attached in Annex FTS5.

9.3.1.7 How to check the oil level

Please refer to the Operational Sheet attached in Annex FTS6.

9.3.1.8 How to start the engine from the external power socket

Please refer to the Operational Sheet attached in Annex FTS7.

9.3.1.9 How to park the aircraft and lock the controls

Please refer to the Operational Sheet attached in Annex FTS8.

9.3.1.10 How to adjust the rudder pedals

Please refer to the Operational Sheet attached in Annex FTS9.

9.3.1.11 How to switch on the avionics

Please refer to the Operational Sheet attached in Annex FTS10.

9.3.2 Additional information for Flight procedures

The following paragraphs describe the operational procedures used to instruct the owner in regard to flight operations.

9.3.2.1 How to use aileron controls

Please refer to the Operational Sheet attached in Annex FTS11.

9.3.2.2 How to use rudder controls

Please refer to the Operational Sheet attached in Annex FTS11.

9.3.2.3 How to use elevator controls

Please refer to the Operational Sheet attached in Annex FTS11.

9.3.2.4 How to use the trim controls

Please refer to the Operational Sheet attached in Annex FTS4.

9.4 *Improvements or corrections*

This form must be used by the owners to report improvements or corrections to this POH. Please copy this page, cut out following the borders and send it to the Company contacts, see paragraph A.2 or A.3.

IMPROVEMENTS OR CORRECTIONS			
NAME (last, first)			
COMPANY/ORGANIZATION			
ADDRESS (NUMBER AND STREET)			
CITY	....		
STATE/PROVINCE	....	**POSTAL CODE**	....
COUNTRY	....		
TELEPHONE NUMBER			
EMAIL			
DESCRIPTION OF SUGGESTED IMPROVEMENTS OR CORRECTIONS:			
SIGNATURE		**DATE**	
FOR THE COMPANY ONLY			
RECEIVED AND MANAGED BY:		**DATE RECEIVED:**	

9.5 *Continued Operational Safety Reporting*

This form must be used by the owners to report safety of flight issue or significant service difficulties. Please copy this page, cut out following the borders and send it to the Company contacts, see paragraph A.2 or A.3.

CONTINUED OPERATIONAL REPORTING FORM			
NAME (last, first)			
COMPANY/ORGANIZATION			
ADDRESS (NUMBER AND STREET)			
CITY	....		
STATE/PROVINCE	....	POSTAL CODE	....
COUNTRY	....		
TELEPHONE NUMBER			
EMAIL			
DESCRIPTION OF SAFETY OF FLIGHT ISSUES OR SIGNIFICANT SERVICE DIFFICULTY:			
SIGNATURE		DATE	
FOR THE COMPANY ONLY			
RECEIVED AND MANAGED BY:		DATE RECEIVED:	

9.6 *Change of address/ownership*

This form must be used by the owners to report a change of address/ownership. Please copy this page, cut out following the borders and send it to the Company contacts, see paragraph A.2 or A.3.

CHANGE OF ADRESS/OWNERSHIP FORM			
AIRCRAFT SERIAL NUMBER:			
AIRCRAFT REGISTRATION NUMBER:			
CURRENT OWNER: (Last, First):		NEW OWNER: (Last, First):	
PREVIOUS ADDRESS: (STREET NUMBER):		NEW ADDRESS: (STREET NUMBER):	
CITY:		CITY:	
STATE/PROVINCE:	POSTAL CODE:	STATE/PROVINCE:	POSTAL CODE: ....
COUNTRY:		COUNTRY:	
TELEPHONE NUMBER:		TELEPHONE NUMBER:	
EMAIL:		EMAIL:	
SIGNATURE		DATE	
FOR THE COMPANY ONLY			
RECEIVED AND MANAGED BY:		DATE RECEIVED:	

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ANNEX A: BASIC EMPTY CG REORDS

Date -	Empty CG AOD (mm/%)	W (kg/lb)	Reason for Change -	Performed by -
....	....	....	W & B after manufacturing	Alpi Aviation
....	....	....	....	....
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....	....	....	....	....
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....	....	....	....	....

Table 70: Standard and Basic Empty weight records

ANNEX B: ACTUAL CG RECORDS

Date -	Actual CG AOD (mm/inch)	W (kg/lb)	Reason for Change -	Performed by -
....	....	....	....	....
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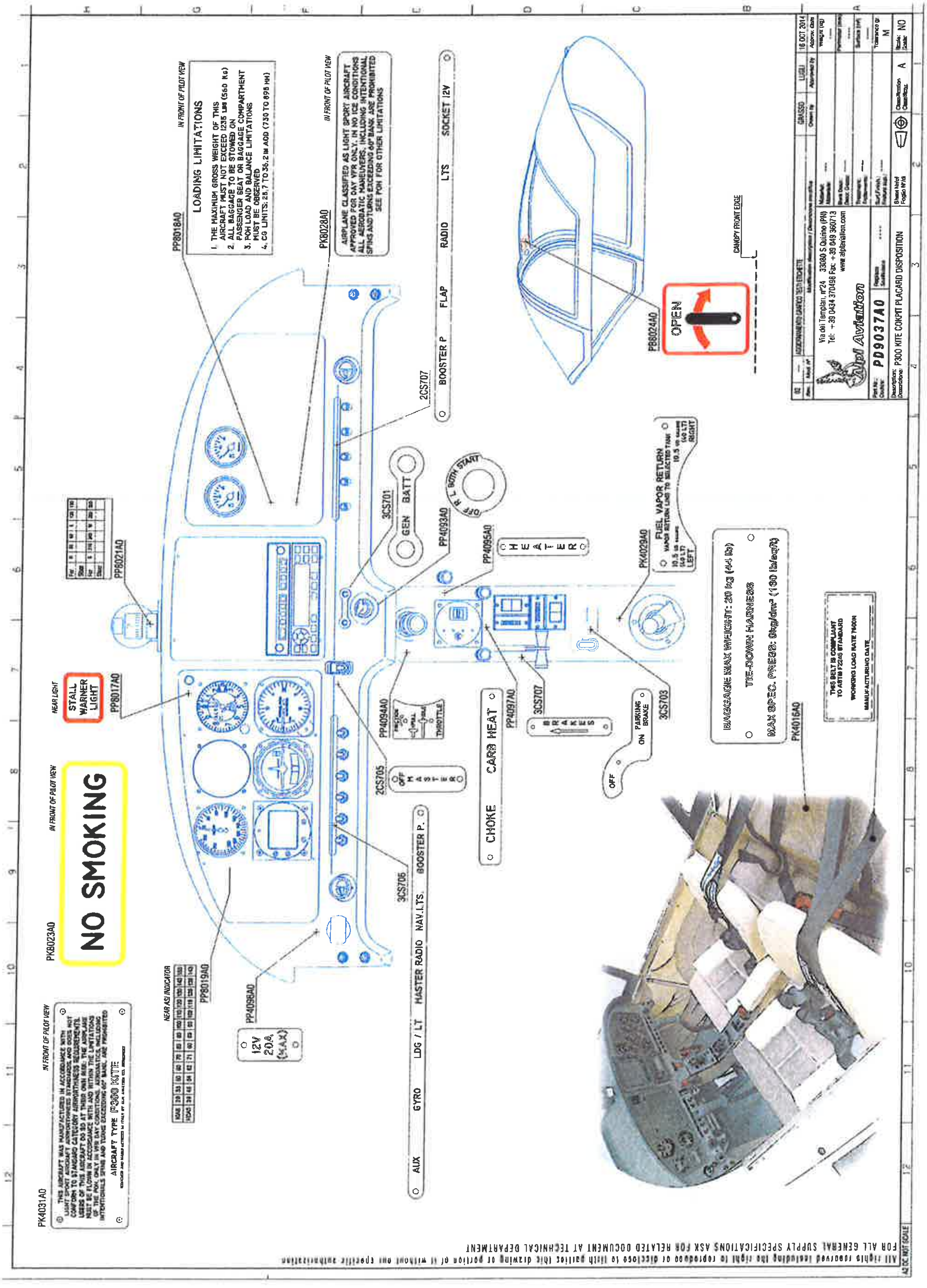
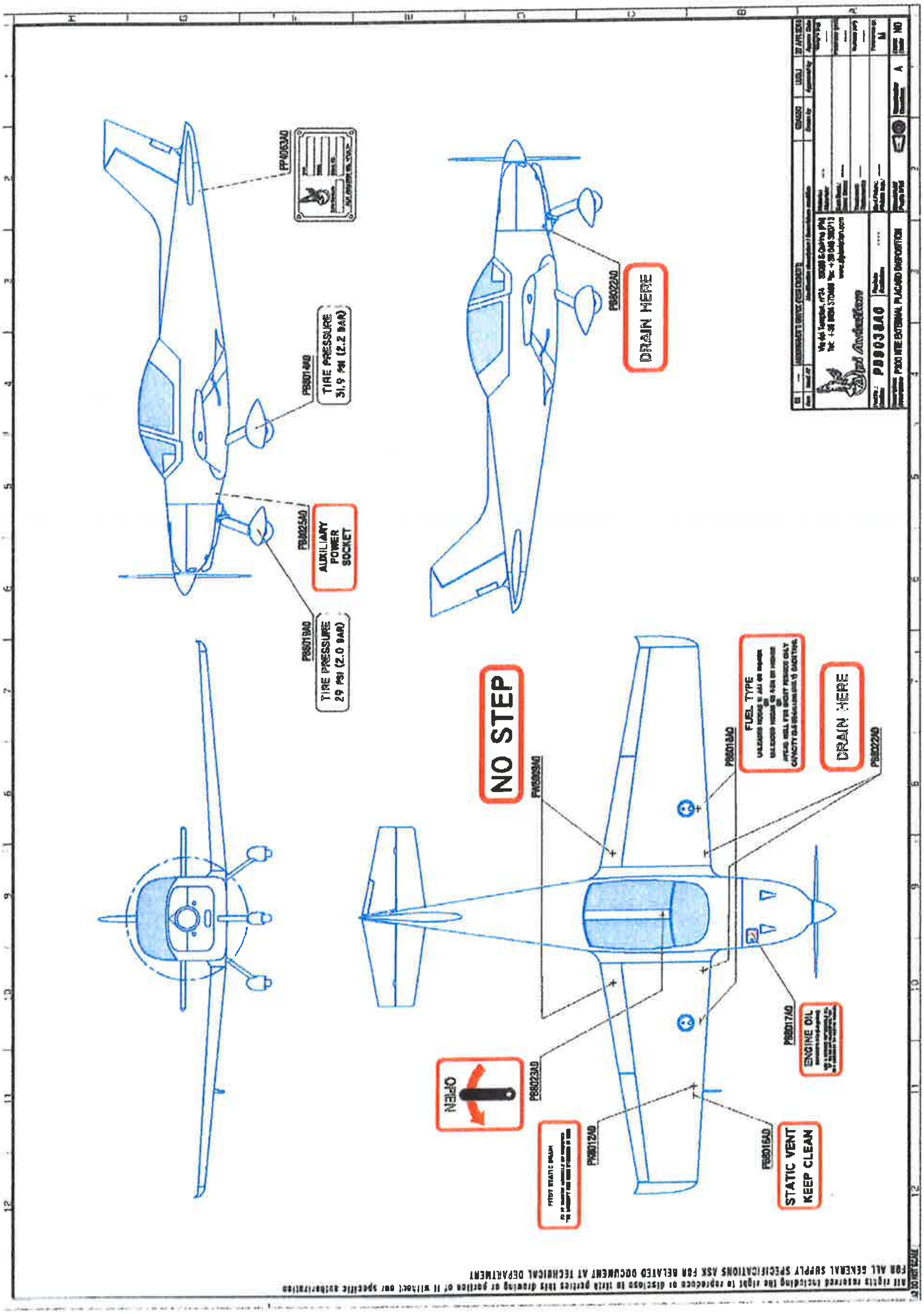
Table 71: Actual weight records

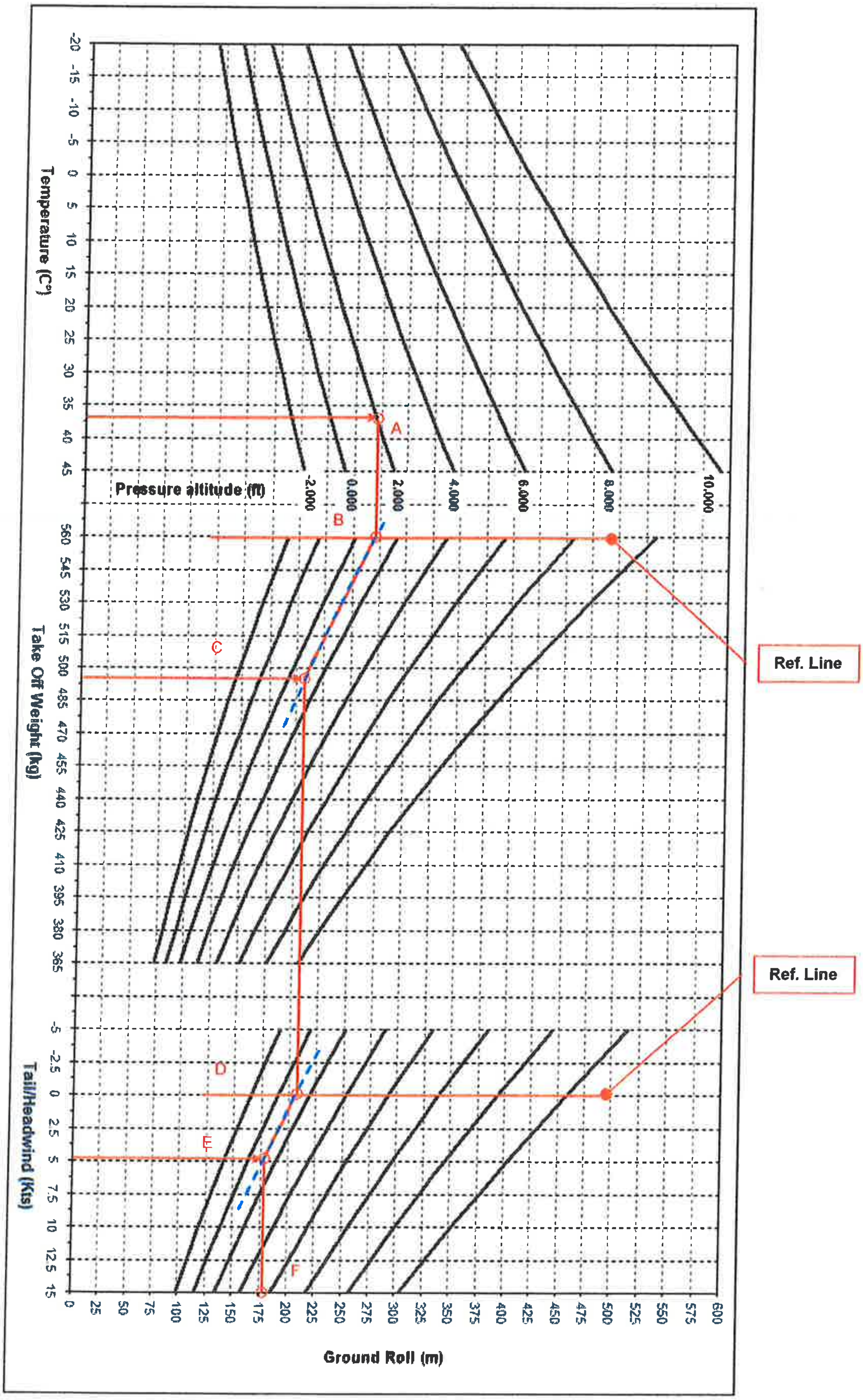
ANNEX D: COCKPIT PLACARDS



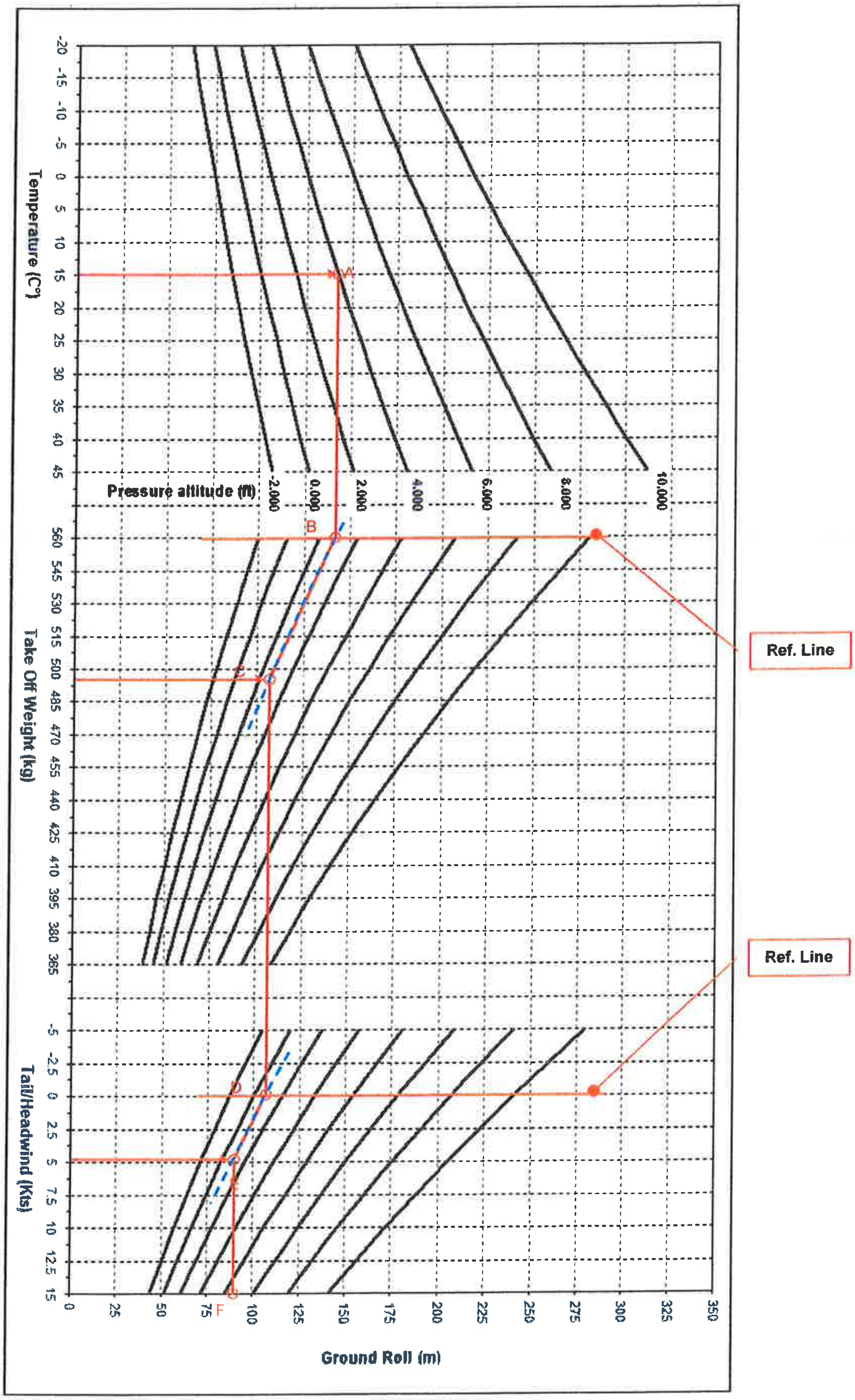
ANNEX D: EXTERNAL PLACARDS



ANNEX E: TAKEOFF GROUND ROLL CHART



ANNEX E: LANDING GROUND ROLL CHART



ANNEX E: GROUND ROLL CHART EXPLANATION

Example for takeoff ground roll calculation. Please use the conversion tables in Paragraph 9.1 to convert domestic Unit System for the diagram entries.

Outside condition:

- ✓ Outside air temperature (OAT) 37°C (98.6F);
- ✓ Pressure altitude at airport 2000 feet;
- ✓ Aircraft weight 496 kg (1093.5 lb);
- ✓ Headwind 4.6 kts.

On the graph at the furthest left of the chart, identify point A where the OAT intersects with the pressure altitude at the airport. Note the pressure altitude lines on the chart are at even two thousand of feet intervals. If the field altitude is between two lines, place point A between the appropriate lines at approximately the correct spacing.

Extend a line horizontally from point A to the reference line on the second graph (the one in the center), place point B. From there, follow parallel to the weight lines until you reach 496 kg (1093.5 lb). This is point C.

Extend a line horizontally from point C to the reference line on the graph on the right and set point D. From there, follow parallel to the wind lines until you reach 4.6 knots. This is point E.

From point E extend a line horizontally to the axis on the far right of the chart. This will give you the takeoff ground distance, point F (approximately 177 m/580 ft) under the conditions listed above, assuming a smooth runway with no appreciable slope.

Example for landing ground roll calculation

Outside condition:

- ✓ Outside air temperature (OAT) 15°C (32F);
- ✓ Pressure altitude at airport 4000 feet;
- ✓ Aircraft weight 496 kg (1093.5 lb);
- ✓ Headwind 4.6 kts.

On the graph at the furthest left of the chart, identify point A where the OAT intersects with the pressure altitude at the airport. Note the pressure altitude lines on the chart are at even two thousands of feet. If the field altitude is between two lines, place point A between the appropriate lines at approximately the correct spacing.

Extend a line horizontally from point A to the reference line on the second graph (the one in the center), place point B. From there, follow parallel to the weight lines until you reach 496 kg (1093.5 lb). This is point C.

Extend a line horizontally from point C to the reference line on the graph on the right and set point D. From there, follow parallel to the wind lines until you reach 4.6 knots. This is point E.

From point E extend a line horizontally to the axis on the far right of the chart. This will give you the landing ground distance, point F (approximately 89 m/292 ft) under the conditions listed above, assuming a smooth runway with no appreciable slope.