FLIGHT MANUAL

US-LSA

P2008 TC

Manufacturer

COSTRUZIONI AERONAUTICHE TECNAM S.r.l.

Serial number: _____
Build year: _____
Registration: _____

Introduction
This manual contains information to be furnished to the pilot as required by the FAA in addition to further information supplied by the manufacturer.
This manual must always be present on board the aircraft.
The aircraft is to be operated in compliance with information and limitations contained herein. All sections follow the ASTM guidelines as finalized 14 December 2007.

Ed1 rev3- 02/08/2017

Record of Revisions

Any revisions to the present Manual, except actual weighing data, must be recorded in the following table. New or amended text in the revised pages will be indicated by a black vertical line in the left-hand margin;

Log of Revisions

Revision No.	Date released	Chapters	Approved By
00	12/06/2013	All	TECNAM
01	25/11/2013	9	TECNAM
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03	02/08/2017	9	TECNAM

List of Effective Pages

Page	Date	Page	Date	Page	Date
1	12/06/2013	36	“	71	“
2	“	37	“	72	“
3	“	38	“	73	“
4	“	39	“	74	19/01/2015
5	“	40	“	75	12/06/2013
6	“	41	“	76	“
7	“	42	“	77	02/08/2017
8	“	43	“	78	“
9	“	44	“	79	“
10	“	45	“	80	“
11	“	46	“		
12	“	47	“		
13	“	48	“		
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28	“	63	“		
29	“	64	“		
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32	“	67	“		
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35	“	70	“		

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WARNINGS - CAUTIONS - NOTES

The following definitions apply to warnings, cautions and notes used in the Flight Manual.

WARNING

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 to any special item not directly related to safety but which is important or unusual.

Abbreviations & Terminology

Airspeed Terminology

KCAS	Calibrated Airspeed is the indicated airspeed corrected for position and instrument error and expressed in knots.
KIAS	Indicated Airspeed is the speed shown on the airspeed indicator and expressed in knots.
KTAS	True Airspeed is the airspeed expressed in knots relative to undisturbed air, which is KCAS, corrected for altitude and temperature.
V_A	Design maneuvering speed
V_C	Design cruising speed
V_{FE}	Maximum Flap Extended Speed is the highest speed permissible with wing flaps in a prescribed extended position.
V_H	Max Speed in level flight with Max continuous power
V_{LO}	Lift off speed: is the speed at which the aircraft generally lifts off from the ground.
V_{NE}	Never Exceed Speed is the speed limit that may not be exceeded at any time.
V_{NO}	Maximum Structural Cruising Speed is the speed that should not be exceeded except in smooth air, then only with caution.
V_S	Stalling Speed or minimum steady flight speed flaps retracted
V_{S0}	Stalling speed or minimum steady flight speed in landing configuration
V_{S1}	Stalling speed in clean configuration (flap 0°)
V_X	Best Angle-of-Climb Speed is the speed, which results in the greatest gain of altitude in a given horizontal distance.
V_Y	Best Rate-of-Climb Speed is the speed, which results in the greatest gain in altitude in a given time.
V_R	Rotation speed: is the speed at which the aircraft rotates about the pitch axis during takeoff.

Meteorology Terminology

OAT	Outside Air Temperature is the free air static temperature expressed in degrees Celsius (°C).
T_S	Standard Temperature is 15°C (59°F) at sea level pressure altitude and decreased by 2°C for each 1000 ft of altitude.
H_P	Pressure Altitude is the altitude read from an altimeter when the barometric subscale has been set to 29.92”

Engine Power Terminology

RPM	Revolutions Per Minute: is the number of revolutions per minute of the propeller, multiplied by 2.4286 yields engine RPM.

Airplane Performance and Flight Planning Terminology

Crosswind Velocity	is the velocity of the crosswind component for which adequate control of the airplane during takeoff and landing is guaranteed
Usable fuel	is the fuel available for flight planning
Unusable fuel	is the quantity of fuel that cannot be safely used in flight
g	is the acceleration of gravity
TOR	is the takeoff distance measured from actual start to wheel lift off point
TOD	is total takeoff distance measured from start to clearing a 50' obstacle
GR	is the distance measured during landing from actual touchdown to stop point
LD	is the distance measured during landing, from clearing a 50' obstacle to actual stop
S/R	is specific range, that is, the distance (in nautical miles) which can be expected at a specific power setting and/or flight configuration per gallon of fuel used

Weight and Balance Terminology

Datum	"Reference datum" is an imaginary vertical plane from which all horizontal distances are measured for balance purposes
Arm	is the horizontal distance from the reference datum to the center of gravity (C.G.) of an item
Moment	is the product of the weight of an item multiplied by its arm
C.G.	Center of Gravity is the point at which the airplane, or equipment, would balance if suspended. Its distance from the reference datum is found by dividing the total moment by the total weight of the airplane
Empty Weight	Empty Weight is the weight of the airplane with engine fluids and oil at operating levels
Useful Load	is the difference between takeoff weight and the empty weight
Maximum Takeoff Weight	is the maximum weight approved for the start of the takeoff run
Maximum Landing Weight	is the maximum weight approved for the landing touch down
Tare	is the weight of chocks, blocks, stands, etc. used when weighing an airplane, and is included in the scale readings; tare is then deducted from the scale reading to obtain the actual (net) airplane weight

Unit Conversion Chart

Multiplying		by ➔	Yields	
Temperature				
Fahrenheit	[°F]	$\frac{5}{9}\cdot(F-32)$	Celsius	[°C]
Celsius	[°C]	$\left(\frac{9}{5}\cdot C\right)+32$	Fahrenheit	[°F]
Forces				
Kilograms	[kg]	2.205	Pounds	[lbs]
Pounds	[lbs]	0.4536	Kilograms	[kg]
Speed				
Meters per second	[m/s]	196.86	Feet per minute	[ft/min]
Feet per minute	[ft/min]	0.00508	Meters per second.	[m/s]
Knots	[kts]	1.853	Kilometers / hour	[km/h]
Kilometers / hour	[km/h]	0.5396	Knots	[kts]
Pressure				
Atmosphere	[atm]	14.7	Pounds / sq. in	[psi]
Pounds / sq. in	[psi]	0.068	Atmosphere	[atm]
Length				
Kilometers	[km]	0.5396	Nautical miles	[nm]
Nautical miles	[nm]	1.853	Kilometers	[km]
Meters	[m]	3.281	Feet	[ft]
Feet	[ft]	0.3048	Meters	[m]
Centimeters	[cm]	0.3937	Inches	[in]
Inches	[in]	2.540	Centimeters	[cm]
Volume				
Liters	[l]	0.2642	U.S. Gallons	[US Gal]
U.S. Gallons	[US Gal]	3.785	Liters	[l]
Area				
Square meters	[m^2]	10.76	Square feet	[sq ft]
Square feet	[sq ft]	0.0929	Square meters	[m^2]
Torque				
foot-pounds		1.3558	Newton-meters	
foot-pounds		0.1383	kilogram-meters	
foot-pounds		12.0	inch-pounds	
inch-pounds		0.0115	kilogram-meters	
inch-pounds		0.1130	Newton-meters	
inch-pounds		0.0833	foot-pounds	
kilogram-meters		7.233	foot-pounds	
kilogram-meters		86.7964	inch-pounds	
kilogram-meters		9.8067	Newton-meters	
Newton-meters		0.7376	foot-pounds	
Newton-meters		8.8508	inch-pounds	
Newton-meters		0.1020	kilogram-meter	

SECTION 1
GENERAL

1.1 Introduction

The P2008 is an high wing, two-place, single-engine airplane equipped with tricycle landing gear. It has metal wings and stabilator and composite fuselage and vertical stabilizer. It is an ASTM compliant airplane designed to be flown by sport pilot rated pilots as well as higher rated pilots.
This aircraft is designed and built in Italy and as such, was built using the metric system. Therefore, the primary numbers are in metric and the US conversion is in parenthesis for your information.
This Flight Manual has been prepared to ASTM standards to provide pilots and instructors with information for the safe and efficient operation of this aircraft.

This Flight Manual contains the following sections:

1. General Information
2. Operating Limitations
3. Weight & Balance
4. Performance
5. Emergency Procedures
6. Normal Procedures
7. Aircraft Ground Handling and Servicing
8. Required Placards and Markings

1.2 Certification Basis

This aircraft is certificated as a Special Light Sport Aircraft under FAR part 21.190 and complies with all applicable ASTM standards.

THREE VIEW DRAWING

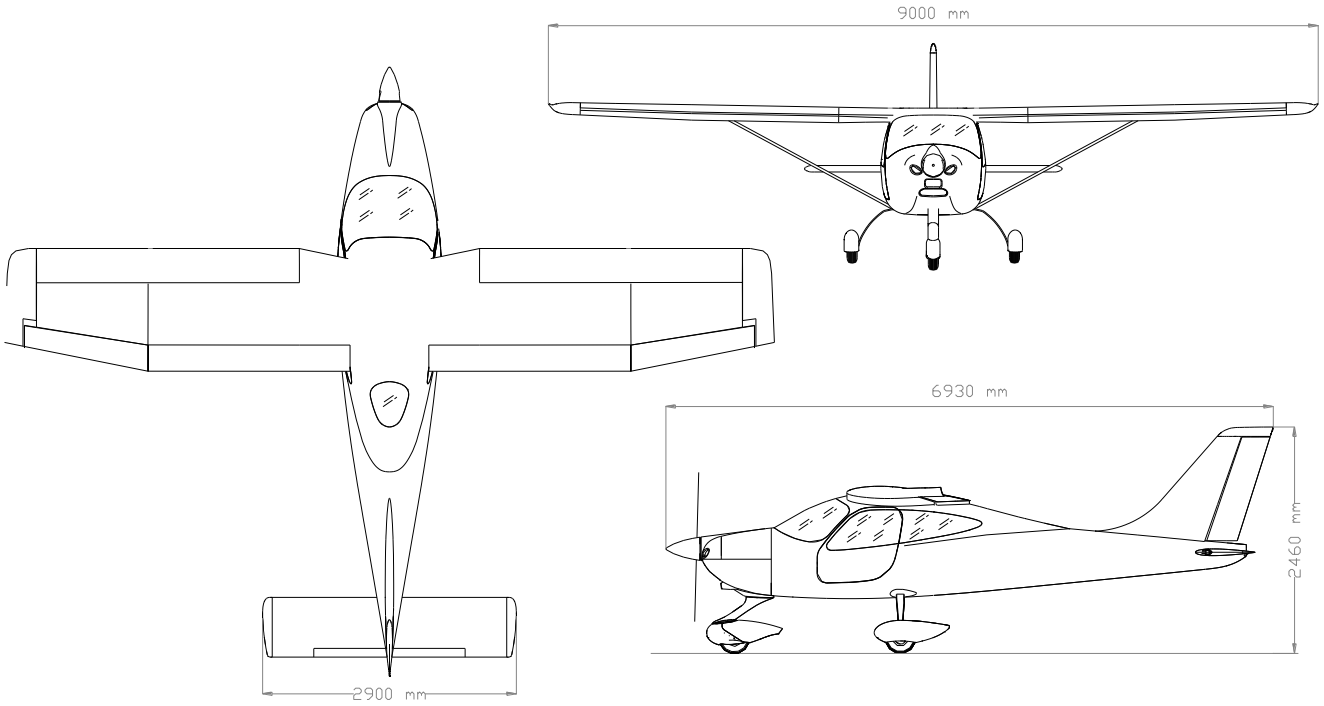


Figure 1-1 General Views

Wing Span	**9.00 m**	**(29.5 ft)**
Length	**6.93 m**	**(22.7 ft)**
Tail height	**2.46 m**	**(8.1 ft)**
Propeller ground clearance	**310 ± 40 mm**	**(12.2 ±1.6 in)**
Minimum ground steering radius	**5.50 m**	**(18.0 ft)**

NOTE

- Dimensions shown refer to aircraft weight of 600 kg (1320 lbs) and normal operating tire pressure

1.3 Descriptive Data

1.3.1 Airframe

1.3.1.1 Wing

Wing Span	9.00 m (29.5 ft)
Wing Area	12.16 m^2 (130.9 ft^2)
Aspect Ratio	6.7
Taper Ratio	0.8
Wing chord	1.373 m (4.5 ft)

1.3.1.2 Fuselage

Overall length	6.93 m (22.7 ft)
Overall width	1.20 m (3.9 ft)
Overall height	2.46 m (8.07 ft)

1.3.1.3 Empennage

Stabilator span	2.90 m (9.51 ft)
Stabilator area	2.03 m^2 (21.8 ft^2)
Vertical tail area	1.06 m^2 (11.4 ft^2)

1.3.1.4 Landing Gear

Wheel track	1.8 m (5.9 ft)
Wheel base	1.94 m (6.4 ft) - 1.74 m (5.7 ft steerable nose landing gear)
Main gear tire	Air Trac 5.00-5 (alternative Goodyear flight special II tire - 5.00-5 6 ply can be fitted)
Nose Gear tire	Air Trac 5.00-5 (alternative Goodyear flight special II tire - 5.00-5 6 ply can be fitted)
Wheel brakes	Marc Ingegno 199-102

1.4 Powerplant

1.4.1 Engine

Manufacturer	Bombardier-Rotax GmbH
Model	914 UL
Certification basis	ASTM 2339 LSA
Type	4 stroke carburetor engine
Maximum power	84.5 kW (113 hp) @ 5800 rpm (max. 5 minutes)
	73.5 kW (98.5 hp) @ 5500 rpm (cont.)

1.4.2 Allowed Propellers

Manufacturer	GT Tonini
Model	GT-2/173/VRR- FW101
Number of blades	2
Diameter	1730 mm (68") (no reduction permitted)
Type	Fixed pitch – wood / composite

Manufacturer	Sensenich
Model	2A0R5R70EN
Number of blades	2
Diameter	1778 mm (70") (no reduction permitted)
Type	Fixed - ground adjustable pitch
Spacer	B-1805-81 TECNAM Spacer

Manufacturer	Sensenich
Model	3B0R5R68C
Number of blades	3
Diameter	1730 (68") (no reduction permitted)
Type	Fixed - ground adjustable pitch
Spacer	B-1805-81 TECNAM Spacer

Manufacturer	MT Propeller
Model	MTV-33-1-A/175-200
Number of blades	2
Diameter	1.75 m
Type	Variable pitch
Spacer	

1.4.3 Oil System

Oil system	Forced, with external oil reservoir
Oil	See Rotax operator's manual
Oil Capacity	Max. 3.0 liters (3.2 qt) – min. 2.0 liters (2.1 qt)

1.4.4 Cooling

Cooling system:	Combination air and liquid cooled system
Coolant:	See Rotax operator's manual
Capacity	3.0 liters (3.17 quarts)

1.4.5 Fuel

Fuel grade:	
Auto fuel	Min. RON 95 (AKI 91 Premium USA) EN 228 Premium EN 228 Premium Plus
Avgas	100LL
Fuel tanks	2 integral wing tanks
Capacity of each	52 liters (13.7 gal)
Total capacity	104 liters (27.5 gal)

1.5 Weights

1.5.1 Maximum Weights

Maximum take-off	600 kg	(1320 lb)
Maximum landing	600 kg	(1320 lb)
Maximum baggage	20 kg	(44 lb)

1.5.2 Standard Weights

Empty weight	355 kg	(783 lb)
Maximum payload	245 kg	(540 lb)

1.5.3 Specific Loadings

Wing loading	59 kg/m^2 (12 lb/ft^2)
Power loading	6.1 kg/hp (13.5 lb/hp)

NOTE
Standard weights are estimates based on standard equipment.

1.6 Standard Equipment

1.6.1 Flight Instruments

Airspeed Indicator, Altimeter, Vertical Speed Indicator, Compass

1.6.2 Engine instruments

Tachometer, MAP indicator, Oil Pressure, Fuel Pressure, Oil Temperature, Cylinder Head Temperature, Hour Meter, Left and Right Fuel Quantity, Volt Meter

1.6.3 Warning Lights and Indicators

Trim Indicator, Flap Indicator, Generator Warning Light

1.6.4 Controls

Dual Stick Flight Controls and Rudder Pedals, Single Throttle, Throttle Friction Control, Engine Choke, Electric

Flaps, Hydraulic Disc Brakes with Parking Brake and toe brakes on both seats, Left and Right Fuel Selector Valve, Direct Nose Wheel Steering (or pivoting NLG with differential breaking system)

1.6.5 Interior

Adjustable Pilot and Copilot Seats, reclining for baggages compartement access, Acoustic Cabin Soundproofing, Adjustable Cabin Air Intakes, Cabin Heat and Windshield Defrost, 12V Power Outlet, Composite Instrument Panel

1.6.6 Exterior

Composite structure, Landing Light, Strobe Light, Fixed Landing Gear, Nose Gear Strut Fairing, Nose and Main Wheel Fairings

1.6.7 Powerplant and Accessories

Rotax 914 UL Engine (114 hp), Composite Covered Wood / Composite Propeller with Spinner , 12Volt 18 Ah Battery, 18 Amp Alternator, Engine Driven Fuel Pump, Electric Starter, Engine Exhaust Muffler, Gascolator with Quick Drain, Integral Wing Fuel Tanks with sump and quick drain, Integral INOX hoses and AN Fittings for fuel line, All Electric Circuits Fuse Protected

1.7 Airframe

1.7.1 Wing

The wing is constructed of a central light alloy torque box; an aluminum leading edge is attached to the front spar while flap and aileron are hinged to rear spar. Flaps are constructed of a center spar to which front and rear ribs are joined; wrap-around aluminum skin panels cover the flap structure. The aileron is constructed of an aluminum spar to which a formed sheet metal leading edge and metal ribs are attached; a wrap-around. Aluminium material covers aileron structure.
The wing box incorporates the integral fuel tanks of 52liters each.

1.7.2 Fuselage

The fuselage and the vertical stabilizer are made up of a composite fiber structure. The engine housing is isolated from the cabin by a stainless steel firewall (0.5mm thick); the steel engine mount is attached to the cabin's composite structure.

NOTE: See the AMM for the lamination schemes and repair procedures.

1.7.3 Empennage

The vertical tail is made up of a mixed structure: the vertical stabilizer is made up of composite fiber while the rudder consists of an aluminum torque stringer connected to light alloy ribs and skin. The horizontal tail is an all-moving type (stabilator); its structure consists of an aluminum spar connected to ribs and leading edge; the entire structure is covered with aluminum material.

1.7.4 Flight controls

The control surfaces are manually operated using a control stick for ailerons and stabilator and rudder pedals for the rudder; longitudinal control acts through a system of push-rods and is equipped with a trim tab. Aileron control is of mixed type with push-rods and cables; the cable control circuit is confined within the cabin and is connected to a pair of push-rods positioned in the wings that control ailerons differentially. Aileron trimming is carried out on ground through a small tab positioned on left aileron.
Flaps are extended via an electric servo actuator controlled by a switch on the panel. Flaps act in a continuous mode; a panel mounted indicator shows surface position. A fuse positioned on the right side of the panel protects the electric circuit.
Longitudinal trim is performed by a small tab positioned on the stabilator and controlled via an electric servo actuator by pushing an Up/Down push-button located on the control stick.

1.7.5 Instrument Panel

The instrument panel is of conventional type, allowing space for a broad range of equipment.

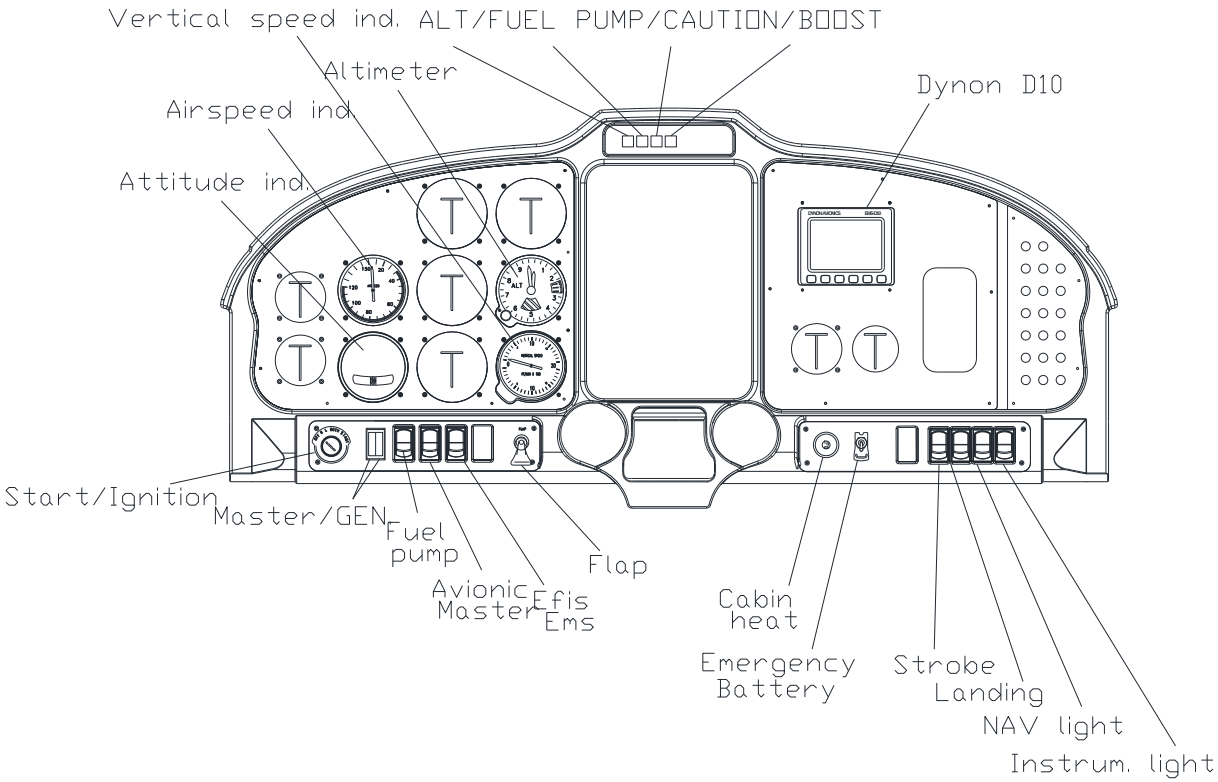


Fig. 1-2 Instrument Panel

1.7.6 Cabin Heat / Defrost

The cabin heat control knob (if available) is positioned on the lower of the instrument panel; when knob is pulled fully outward, cabin receives maximum hot air. Vents are located by the rudder pedals and above instrument panel. If necessary, outside fresh air can be circulated inside cabin by opening the vents on the panel.

1.7.7 Throttle Friction Lock

Adjust the engine's throttle friction by tightening or loosening the friction lock located on the console side near center throttle control.

1.7.8 Seats, Seatbelts, and Shoulder harnesses

The P2008usually comes with three point safety belts with waist and diagonal straps adjustable via a sliding metal buckle. Standard seats are aluminum with cushions. Seats are adjustable fore and aft by using the handle located under the seat on the outboard sides. Pushing the lever towards the center of the aircraft will release the locking pin allowing you to move the seat fore and aft. Release the lever when the desired position is found making sure that the locking pin reengages in the seat track.
P2008 is equipped with standard bucket seat for the access to the baggage compartment. The same lever allows the pilot to regulate the seat in two position: 20° and 25° to increase the flight comfort.

WARNING

Make sure that the locking pin is securely installed or the seat will not lock in position.

1.7.9 Doors

Standard doors feature a composite frame supporting a clear or tinted window. An internal safety latch mechanism is positioned in proximity of door's upper edge and must be used before flight to secure door. Mechanism rotates, before flight, to engage doorframe to cabin composite frame.

1.7.10 Baggage compartment

The baggage compartment is located behind the seats. Baggage shall be uniformly distributed and its weight shall not exceed 20 kg (44 lbs) and the c.g. must be computed before flight. Always tie down the baggage by using the adjustable tie-down net provided.

1.8 Powerplant

1.8.1 Engine

Rotax is an Austrian engine manufacturer, founded in 1920 in Dresden, Germany. In 1970 Bombardier bought Rotax. The company constructed only two-stroke engines until 1982, when it started building four-stroke engines.
The Rotax 914 UL engine is an ASTM compliant engine. The 914 UL is a four stroke, horizontally opposed, dual spark ignition engine with single central camshaft with hydraulic tappets. The 914UL has liquid cooled cylinder heads and ram air cooled cylinders and engine. It is rated 84.5 kW at 5800 RPM and can be run continuously 73.5 kW at 5500 RPM.
The oil tank is installed behind the firewall protected from heat sources and holds 3 liters (3.2 quarts) of oil. Some holes on the bracket structure allow for air ventilation.
The reservoir is fitted with a dipstick; a hose, immediately located beneath the filler cap, allows for oil relief discharged in a safe zone in the cowling, far from exhausts and other heat sources.
The oil lubricates also the turbocharger components via a separate oil line directly from the oil pump.
The dual ignition system is a solid state, breakerless, capacitive discharge, interference suppression system instead of a mechanical magneto system. Each ignition system is powered by individual and totally independent AC generators which are not dependent on the aircraft battery.
The electrical system consists of an integrated AC generator with an external rectifier – regulator. An external alternator can be installed. The Rotax engine is equipped with an electric starter.
The dual carburetors are constant depression carburetors that automatically adjust for altitude.
Two electric fuel pumps feed the engine. One is automatically switched ON when the engine is running; the auxiliary one is controlled by the pilot.
The two fuel pumps are in parallel while the flow path is guaranteed via check valves.
Cooling system is designed for liquid cooling of the cylinders heads and ram-air cooling of the cylinders. The liquid system is a closed circuit with an overflow bottle and an expansion tank.
The coolant flow is forced by a water pump, driven from the camshaft, from the radiator to the cylinder heads. From the top of the cylinder heads the coolant passes on to the expansion tank. Since the standard location of the radiator is below engine level, the expansion tank, located on top of the engine, allows for coolant expansion.
The engine uses a reduction gearbox with a gear reduction ratio of 2.4286:1.
A central console located throttle in the cockpit controls the engine.
The owner can register and get important information from the following website: http://www.rotax-owner.com/.

1.8.2 Propeller

The GT propeller is a wood composite propeller built by GT Tonini in Italy. The Tonini brothers began building propellers in 1969.
The propeller is finished with a white polyurethane lacquer and an additional layer of transparent lacquer. The tips are painted in bright yellow and red so that when the propeller is turning it is obvious to personnel on the ground. The back of the propeller is painted black to prevent reflections. More information on the company and the propeller can be found at:

http://www.gt-propellers.com

The Sensenich 2 or 3 blades propellers are also allowed to be mounted with the Sensenich provided installation kit for Tecnam. For Propeller installation see the manufacturer's AMM P/N 2A0 (2 Blades) and 3B0R5 / 3B0R5-FD (3 Blades). The propeller pitch must be always set following Tecnam related **Job Card N° 448 (Sensenich 2/3 Blades Installation and Settings)** to ensure the pitch will not allow the airplane to fly over the maximum legal 120 KCAS and in order to avoid overspeeds which could damage the engine. More information on the company and the propeller can be found at http://www.sensenich.com/.

The MT Propeller MTV-33-1 can also be installed on P2008 A/C. It is a hydraulic constant speed propeller, of composite fibre construction with stainless steel leading edge for all weather operation.
More information on the manufacturer and the propellercan be found at http://www.mt-propeller.com.

1.8.3 Fuel system

The system is equipped with two aluminum fuel tanks integrated in the wing box and accessible for inspection through two dedicated covers. Capacity of individual tank is 52lt (13.7 gal) and total usable fuel is 104lt (27.4 gal). Each fuel tank is equipped with a cabin installed shutoff and selector Andair valve. A strainer cup with a drainage valve (Gascolator) is located on the engine side of the firewall. Fuel level indicators for each tank are located on instrument panel. Fuel feed is through two electrical pumps. All fuel lines located in the engine compartment are protected with fireproof braiding to avoid possible fire. Figure 1-3 illustrates the schematic of the fuel system. All lines in the fuselage are made in steel hoses to prevent leaks and damages. Fittings are AN type.

WARNING

Fuel quantity should be checked on a level surface or a false reading may result. Always visually verify fuel quantity by looking inside the tanks during filling.

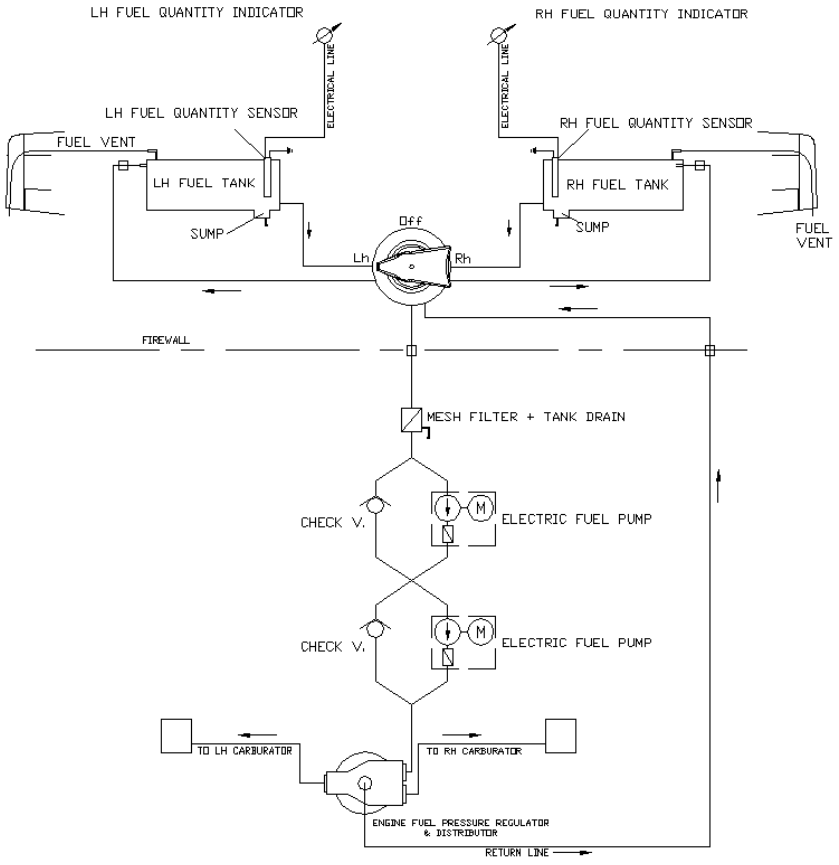


Figure 1-3 Fuel System

1.9 Electrical System

The aircraft's electrical system consists of a 12 VoltDC circuit controlled by a Master switch located on the instrument panel. An integrated AC generator provides electricity and a 12 Volt battery placed in the fuselage or in the engine compartment. The generator light is located on the right side of the instrument panel.

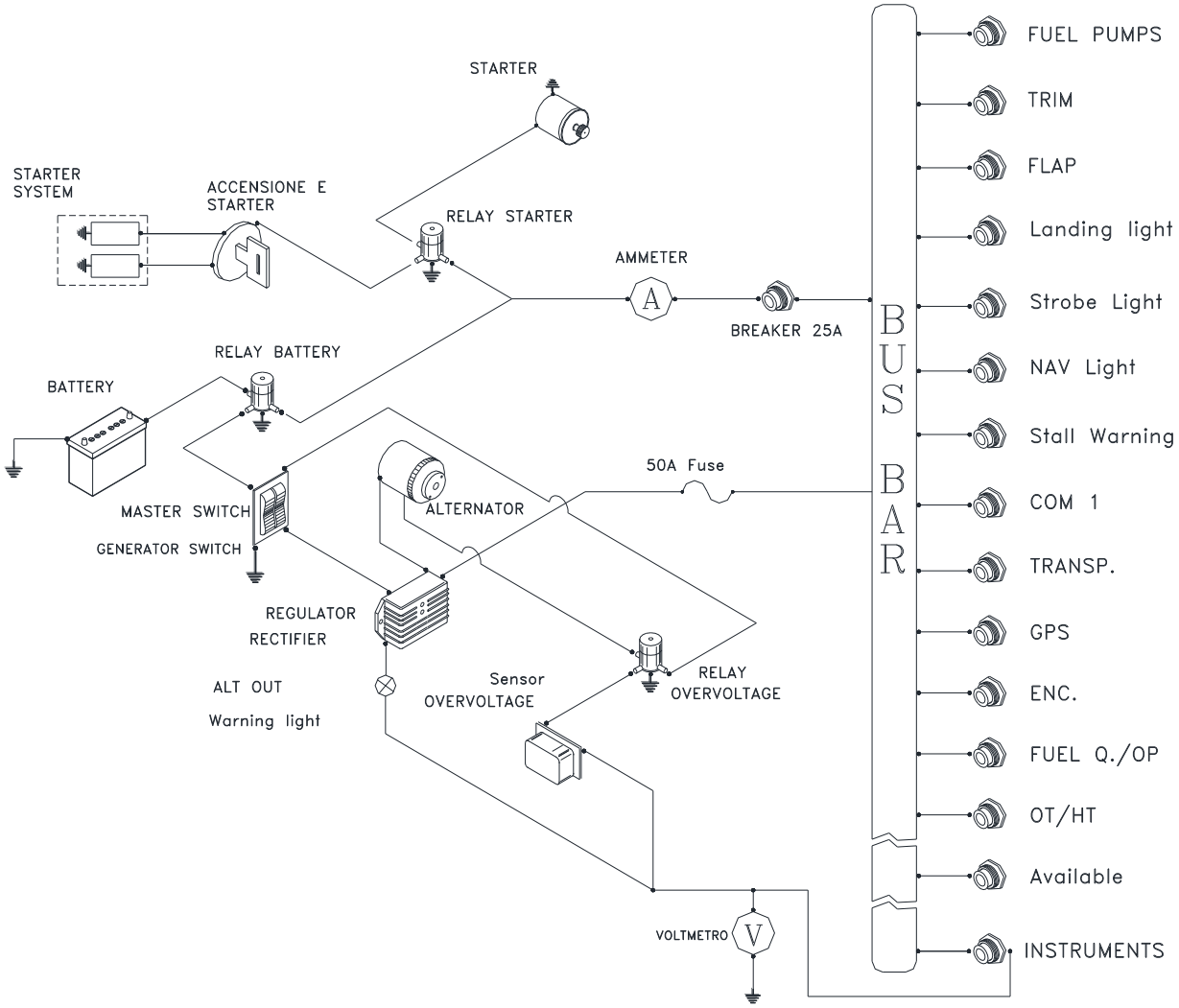


Fig.1-4 Electrical system schematic (some fuses may not be installed on the standard equipped aircraft)

1.9.1 Alternator light

Alternator (ALT) light (red) illuminates for the following conditions:

- Alternator failure
- Failure of regulator/rectifier, with consequent over voltage sensor set off

NOTE

The battery can support energy requirements for approximately 20 minutes.

1.9.2 Voltmeter

The voltmeter indicates voltage on the bus bar. The normal range is from 12 to 14 volts. There is a red radial line at 10 volts.

1.9.3 Oil temperature

Temperatures are read in degrees Celsius. The oil temperature indicator has a green normal operating range, yellow caution ranges, and two red lines.

1.9.4 Cylinder head temperature

The cylinder head temperature gauge normally reads the number three cylinder head temperature. It also indirectly reflects the coolant temperature. The cylinder head temperature reads in degrees Celsius.

NOTE
The same fuse protects all temperature instruments.

1.9.5 Oil Pressure

The oil pressure reads values in bars and has a green normal operating range, yellow caution ranges, and two red lines.

NOTE
One bar is equal to about 14.7 pounds of pressure

1.9.6 O.A.T. Indicator

A Outside Air Temperature indicator (°C), if provided, indicates the air temperature outside the aircraft. The sensor is placed on cabin top.

1.9.7 Stall Warning System

The aircraft may be equipped with a stall warning system consisting of a sensor located on the right wing leading edge connected to a warning horn located on the instrument panel.

1.9.8 Avionics

The central part of the instrument panel holds room for avionics equipment. The manufacturer of each individual system furnishes features for each system.

1.9.9 External Lights

Typical exterior lighting consists of:

- Landing light
- Tail Strobe Light
- Navigation lights
- Wing Strobe Lights

1.9.9.1 Navigation Lights

Navigation lights are installed on the wing tips and (optionally) on top of vertical stabilizer. A single switch located on instrument panel controls all navigation lights. A breaker protects the lights.
A green light is located on right wing tip; a red light on left wing tip and a white lamp on both wings or optionally on vertical stabilizer.

1.9.9.2 Landing Light

The landing light is located on the LH wing leading edge. Landing light switch is located on instrument panel. Light is protected by a 3 Amp breaker.

1.9.9.3 Tail Strobe Light

The strobe light is, optionally, installed on top of the vertical stabilizer.
Strobe light is activated by a switch and is protected by a fuse. Switch and fuse are positioned on the instrument panel. The signal reaches a strobe light trigger circuit box positioned in the tail cone just behind the baggage compartment.

1.10 Pitot and Static Pressure Systems

The airspeed indicator system for the aircraft is shown below.
On the left wing's strut the Pitot tube (1) while on the fuselage's sides there are two static ports (2). Two flexible hoses (3) feed the airspeed indicator (4), the altimeter (5) and the VSI (6) on the instrument panel.

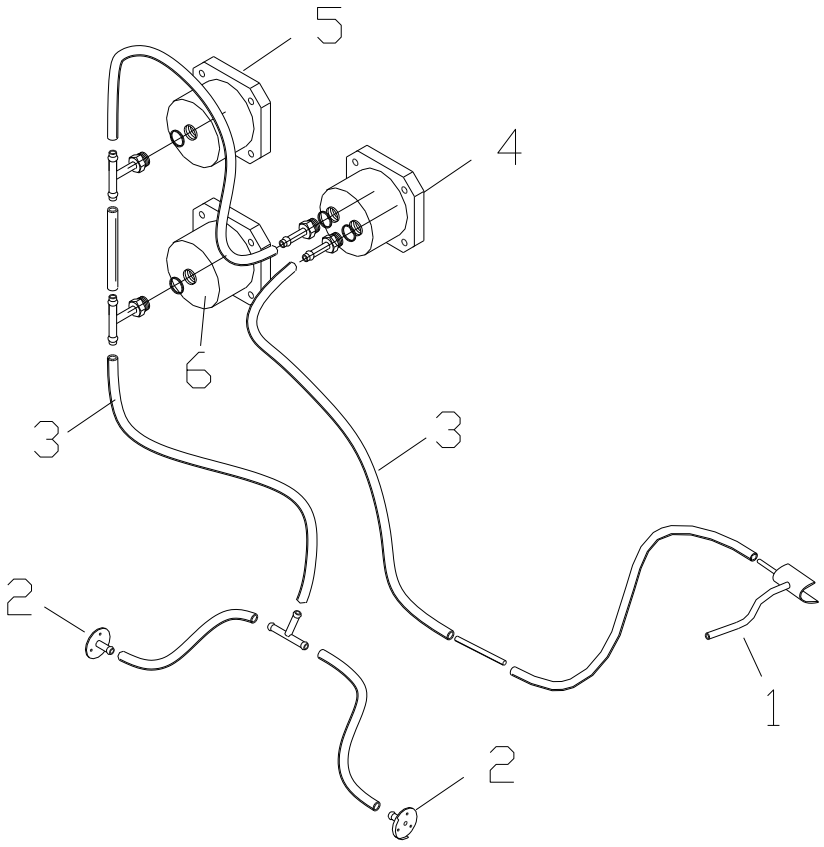


Fig.1-5 Pitot Static system

1.11 Landing Gear

The main landing gear consists of two special steel spring-leaf struts positioned crossways to fuselage for elastic cushioning of landing loads.
The two steel spring-leaf struts are attached to the fuselage underside via the main girder.
Two rawhide liners are inserted between each spring-leaf and the girder. Two bolts and nuts secure the individual spring-leaf to the edge of the girder via a light alloy clamp while a single bolt and nut secures the inboard end of the leaf-spring to the girder.

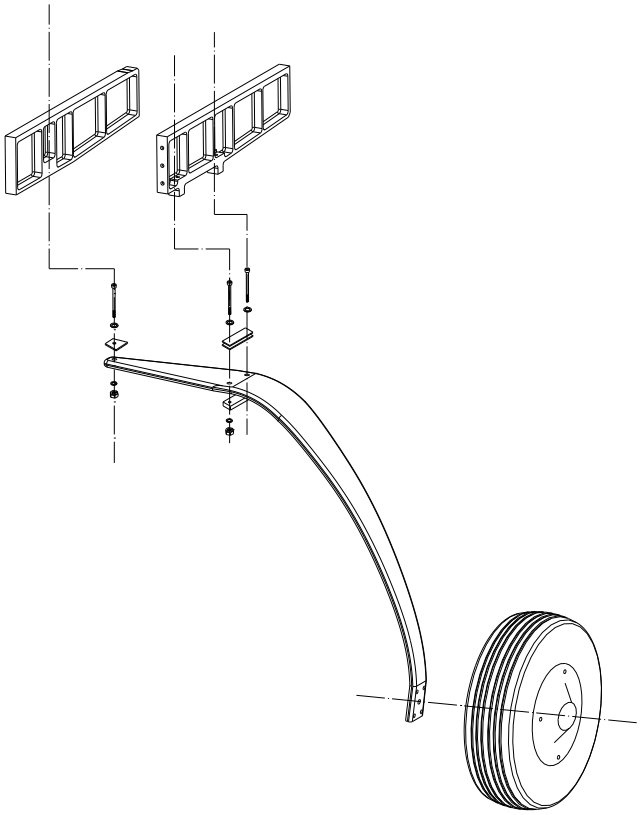


Figure 1-6 Main landing gear

1.11.1 Brake System

Figure 7-2 shows the brake system schematic diagram.
The left and right wheel brakes are independent systems. The system has a reservoir (4) on the co-pilot's brake pedals (1). The reservoir is directly connected to the brake master cylinders (3). Two flexible hoses connect the master cylinders on the co-pilot's brake pedals to the master cylinders on the pilot's brake pedals.
The parking brake valve (6) is mounted on the floor of the fuselage, below the seats and it's activated by lever (2).
Each main wheel has a brake disc (7).

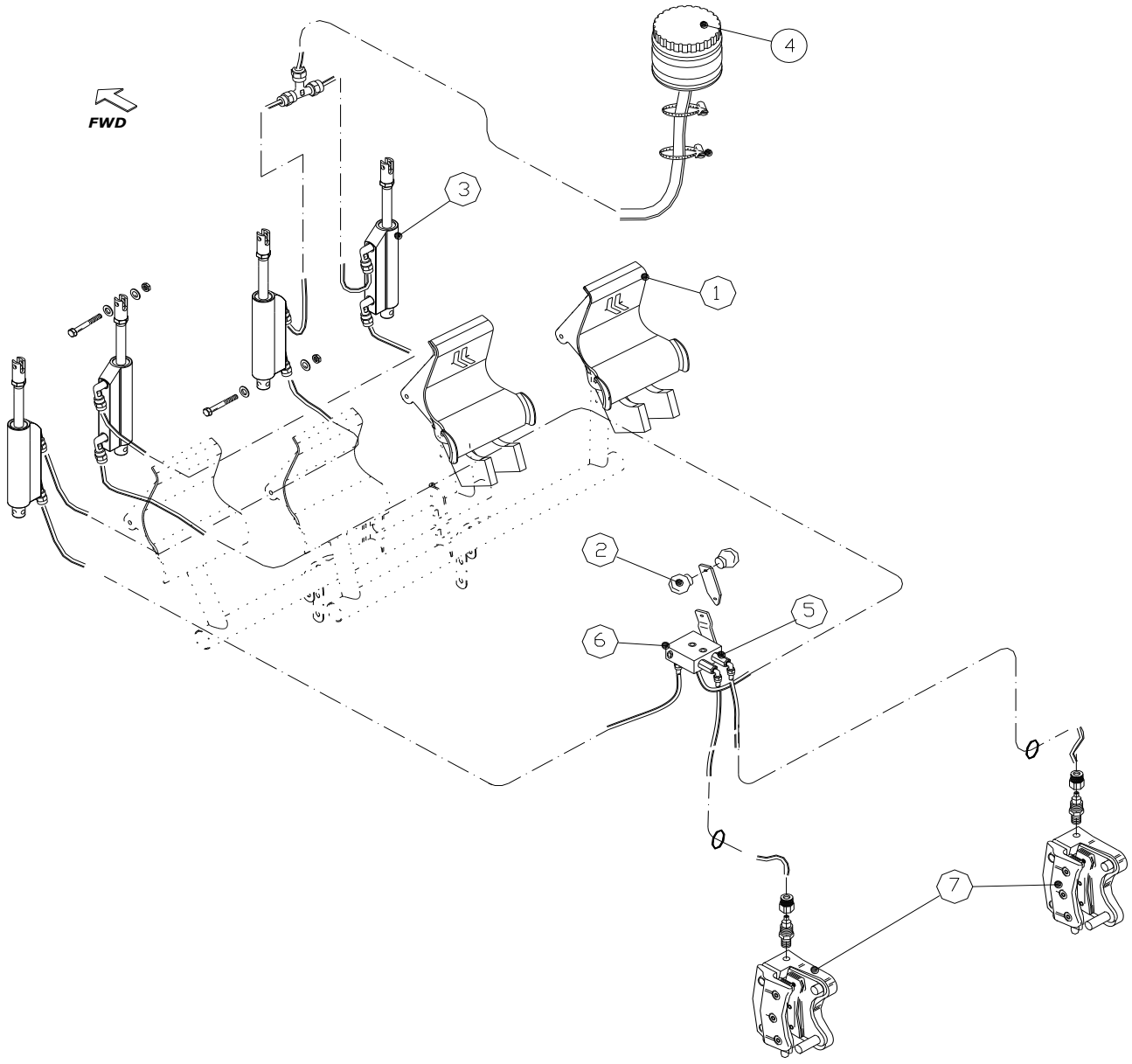


Fig. 1-7 Brake System

SECTION 2
OPERATING LIMITATIONS

Section 2 includes operating limitations, instrument markings, and basic placards necessary for safe operation of the P2008, its engine, standard systems and standard equipment.

2.1.1 Airspeed Limitations

Airspeed limitations and their operational significance are shown below:

SPEED		KCAS	KIAS	REMARKS
V_{NE}	Never exceed speed	135	134	Never exceed this speed in any operation
V_{NO}	Maximum Structural Cruising Speed	105	106	Never exceed this speed unless in smooth air, and then only with caution
V_A	Maneuvering speed	97	98	Do not make full or abrupt control movements above this speed as this may cause stress in excess of limit load factor
V_{FE}	Maximum flap extended speed	66	68	Never exceed this speed for any given flap setting
V_H	Maximum speed	119	120	Maximum speed in level flight at max continuous power (MSL)
V_X	Best Angle Climb	63	65	The speed which results in the greatest gain of altitude in a given horizontal distance
V_Y	Best Rate Climb	76	78	The speed which results in the greatest gain of altitude in a given time

2.1.2 Airspeed Indicator Markings

Airspeed indicator markings and their color code are explained in the following table:

MARKING	KIAS	SIGNIFICANCE
White arc	44 – 68	Flap Operating Range (lower limit is V_{S0}, at maximum weight and upper limit is maximum speed permissible with full flaps)
Green arc	48 – 106	Normal Operating Range (lower limit is V_{S1} at maximum weight and flaps at 0° and upper limit is maximum structural speed V_{NO})
Yellow arc	106-134	Operations must be conducted with caution and only in smooth air
Red line	134	Maximum speed for all operations

2.1.3 Powerplant Limitations

The following table lists operating limitations for aircraft installed engine:
Engine manufacturer: Bombardier Rotax GmbH.
Engine model: 914 UL

Maximum power: (see table below)

	Max Power kW (hp)	**Max rpm. rpm prop.(engine)**	**Time max. (min)**
Max.	84.5 (113)	2388 (5800)	5
Max cont.	73.5 (98.5)	2265 (5500)	-

NOTE
Static engine rpm should be 5100 ± 250 under no wind conditions.

2.1.4 Temperatures

Max cylinder heads	135° C
Max coolant	120° C
Min. / Max. Oil	50° C / 130° C
Oil normal operating temperature (approx.)	90° C – 110° C

2.1.5 Oil Pressure

Minimum	0.8 bar	Below 3500 RPM
Normal	2.0 - 5.0 bar	Above 3500 RPM

2.1.6 Operating & starting temperature range

OAT Min	-25° C
OAT Max	+50° C

Warning
Admissible pressure for cold start is 7 bar maximum for short periods.

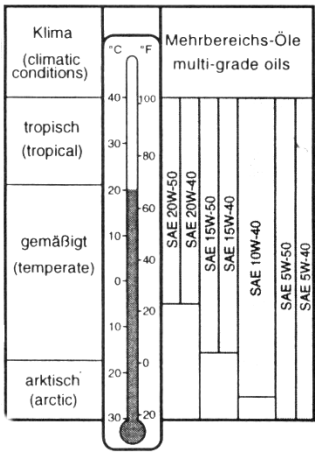
For your information
Bar is a unit of measure. The word comes from the Greek baros, "weighty." We see the same root in our word, barometer, for an instrument measuring atmospheric pressure. One bar is just a bit less than the average pressure of the Earth's atmosphere, which is 1013.25 bar. In practice, meteorologists generally record atmospheric pressure in millibars (mb). In English-speaking countries, barometric pressure is also expressed as the height, in inches, of a column of mercury supported by the pressure of the atmosphere. In this unit, one bar equals 29.53 inches of mercury (in Hg) or 14.5 PSI.

2.1.7 Fuel Pressure

Min	0.15 bar (2.2 PSI)
Max	0.35 bar (5.08PSI)

2.1.8 Lubricant

Viscosity
Use viscosity grade oil as specified in the following table:



Warning
Admissible pressure for cold start is 7 bar maximum for short periods

Warning
Use of Aviation Grade Oil with or without additives is not permitted

2.1.9 Coolant

Coolant type and specifications are detailed into the "Rotax Operator's Manual" and in its related documents.

2.1.10 Propellers

Manufacturer	GT Tonini
Model	GT-2/173/VRR- FW101
Number of blades	2
Diameter	1730 mm (68") (no reduction permitted)
Type	Fixed pitch – wood / composite **NO REDUCTIONS ARE PERMITTED**

Manufacturer:	Sensenich Propellers
Model:	2A0R5R70EN (2 Blades) - 3B0R5R68C (3 Blades)
Propeller type:	2-3 Blades Composite Ground Adjustable Pitch
Diameter:	1778 mm (70") (2 Blades) - 1730 mm (68") (3 Blades) **NO REDUCTIONS ARE PERMITTED**

2.1.11 Fuel

Two tanks:	52 liters (13.7 gallons)
Total fuel capacity:	104 liters (27.5 gallons)

NOTE
During all phases of flight, one tank normally supplies engine fuel feed

Warning

Compensate for uneven fuel tank levels by closing the fuel valve on the tank with more fuel making sure that one fuel valve is in the on position at all times.

2.1.12 Approved Fuel

Min. RON 95 (AKI 91 Premium USA)	EN 228 Premium	EN 228 Premium Plus	AVGAS 100LL (see Warning below)

Warning

Prolonged use of Aviation Fuel Avgas 100LL results in greater wear of valve seats and greater combustion deposits inside cylinders due to higher lead content. It is therefore suggested to avoid using this type of fuel unless strictly necessary.

2.1.13 Powerplant Instrument Markings

Powerplant instrument markings and their color code significance are shown below:

Instrument		**Red line Minimum limit**	**Green arc Normal operating**	**Yellow arc Caution**	**Red line Maximum limit**
Engine Tach	Rpm	--------	1400-5500	5500-5800	5800
Oil Temp.	°C	50	90-110	50 - 90 110-130	130°C
Cylinder heads temp.	°C	--------	50 - 135	--------	135°C
Oil pressure	Bar	0.8	2 – 5	0.8 – 2 5 – 7	7
Fuel Pressure	PSI	2.2 (0.15 Bar)	2.2 – 5.08 (0.15-0.35 Bar)		5.08 (0.35 Bar)

2.1.14 Other Instrument Markings

Instrument	**Red line Minimum limit**	**Green arc Normal operating**	**Yellow arc Caution**	**Red line Maximum limit**
Voltmeter	10 Volt	12 - 14 Volt	----	----
Suction gauge (if installed)	4.0 in. Hg	4.5 – 5.5 in. Hg	----	----

2.1.15 Weights

Maximum takeoff weight:	600 kg (1320 lbs)
Maximum landing weight:	600 kg (1320 lbs)
Maximum baggage weight:	20 kg (44 lbs)

2.1.16 Center of Gravity Limits

Forward limit	20% MAC for all weights
Aft limit	33% MAC for all weights
Datum	Propeller support flange w/o spacer
Bubble Level	Baggage compartment floor

Warning

It is the pilot's responsibility to insure that airplane is properly loaded

2.1.17 Approved Maneuvers

This aircraft is intended for non-aerobatic operation only. Non-aerobatic operation includes:

- Any maneuver pertaining to "normal" flight
- Stalls (except whip stalls)
- Lazy eights
- Chandelles
- Turns in which the angle of bank is not more than 60°
- Acrobatic maneuvers are not approved

Recommended entry speeds for each approved maneuver are as follows:

Maneuver	Speed (KIAS)	Speed (KCAS)
Lazy eight	89	88
Chandelle	89	88
Steep turn (max 60°)	89	88
Stall	Slow deceleration (1 Knots/sec)	

Warning

Limit load factor could be exceeded by moving the flight controls abruptly to full control deflection at a speed above V_A (Maneuvering Speed).

2.1.18 Maneuvering Load Factor Limits

Maneuvering load factors are as follows:

Flaps		
0°	+4	-2
LND	+2	0

2.1.19 Flight Crew

Minimum crew for flight is one pilot seated on the left side.

2.1.20 Kinds of Operations

The airplane, in standard configuration, is approved only for day VFR operation with terrain visual contact. Minimum equipment required is as follows:

- Altimeter
- Airspeed Indicator
- Heading Indicator
- Fuel Gauges
- Oil Pressure Indicator
- Oil Temp. Indicator
- Cylinder Heads Temp. Indicator
- Outside Air Temp. indicator
- Tachometer
- Chronometer

For further standard equipment refer to section 6.
Flight into expected and/or known icing conditions is prohibited.

NOTE

A different equipment list may be asked to fulfill national or specific requirements.
It's a responsibility of the continued airworthiness manager to be compliant with these requirements.

2.1.21 Day VFR

The airplane, in standard configuration, is approved only for day VFR operations under VMC:

- Altimeter
- Airspeed Indicator
- Compass
- Fuel Gauges
- Oil Pressure Indicator
- Oil Temp. Indicator
- Cylinder Head Temp. Indicator
- Tachometer

Flight into expected and/or known-icing conditions is prohibited

2.1.22 Night

Night flight is approved if the aircraft is equipped as per the ASTM standard F2245-06 A2 - LIGHT AIRCRAFT TO BE FLOWN AT NIGHT as well as any pertinent FAR.

NOTE
The FAA requires that the pilot possesses a minimum of a Private Pilot certificate and a current medical to fly at night. See the FARs for more information.

2.1.23 IFR

IFR flight is not allowed

2.1.24 Demonstrated Crosswind Safe Operations

Demonstrated crosswind component is 15 knots.

2.1.25 Service Ceiling

16,000’

2.1.26 Limitation Placards

See Section 8

SECTION 3
WEIGHT & BALANCE

This section describes the procedure for establishing the basic empty weight and moment of the aircraft. Loading procedure information is also provided.

3.1 Aircraft weighing procedures

3.1.1 Preparation

- Carry out weighing procedure inside closed hangar
- Remove from cabin any objects left unintentionally
- Insure Flight Manual is on board
- Align nose wheel
- Drain fuel via the specific drain valve
- Oil, hydraulic fluid and coolant to operating levels
- Move sliding seats to most forward position
- Raise flaps to fully retracted position (0°)
- Place control surfaces in neutral position
- Place scales (min. capacity 200 kg440 pounds) under each wheel
- Level the aircraft using baggage floor as datum
- Center bubble on level by deflating nose tire
- Record weight shown on each scale
- Repeat weighing procedure three times

3.1.2 Calculate empty weight Weighing

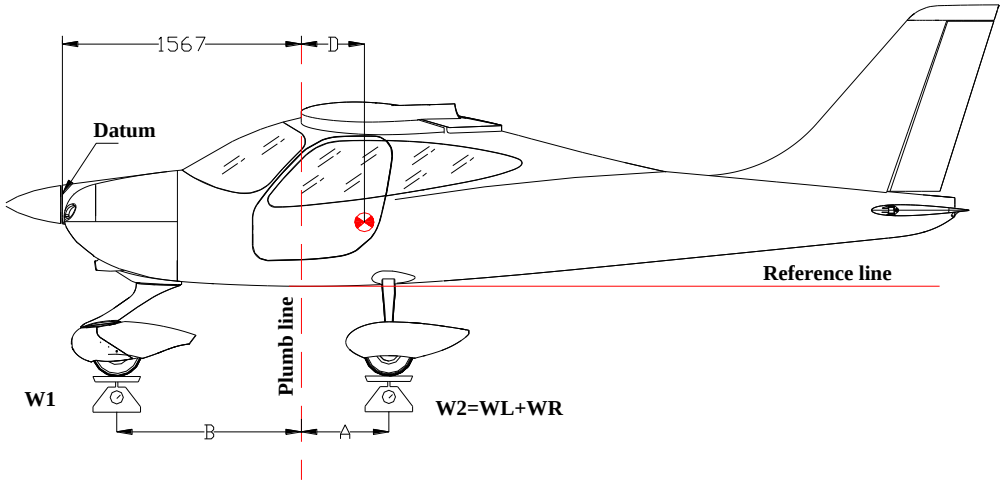
- Record weight shown on each scale
- Repeat weighing procedure three times
- Calculate empty weight

3.1.3 Determination of C.G. location

- Drop a plumb bob tangent to the leading edge (approximately one meter from wing root) and trace reference mark on the floor.
- Repeat operation for other half-wing.
- Stretch a taught line between the two marks
- Measure the distance between the reference line and main wheel axis
- Using recorded data it is possible to determine the aircraft's C.G. location and moment (see following table)

3.2 Weighing report

Model P2008_____S/N _____ Date _____



Datum: Propeller support flange w/o spacer. - *Equipment list*, date: _____

	Kg
Nose wheel weight	W_1 =
LH wheel weight	W_L =
RH wheel weight	W_R =
$W_2 = W_L+W_R$ =	

	meters
Plumb bob distance LH wheel	A_L=
Plumb bob distance RH wheel	A_R =
Average distance $(A_L+ A_R)/2$	A =
Bob distance from nose wheel	B =

Empty weight (1) We = $W_1 + W_2$ =

$$D = \frac{W_2 \cdot A - W_1 \cdot B}{We} = m$$

$$D\% = \frac{D}{1.373} \cdot 100 =$$

Empty weight moment: **M** = [(D+1.567)·We] = $Kg \cdot m$

Maximum takeoff weight	W_T = 600 kg
Empty weight	We =
Maximum payload W_T - We	Wu =

Sign: _____

1 - Including unusable fuel

NOTE: The distances A and B vary from the aircraft with pivoting NLG configuration and the aircraft with steerable NLG. This weighing report remains valid.

3.2.1 Center of Gravity Limits

Forward limit	20% MAC for all weights
Aft limit	33% MAC for all weights
Datum	Propeller support flange w/o spacer
Bubble Level	Cabin floor

3.2.2 Distances from the datum

The mean distances of the occupants, baggage and fuel from the datum are:

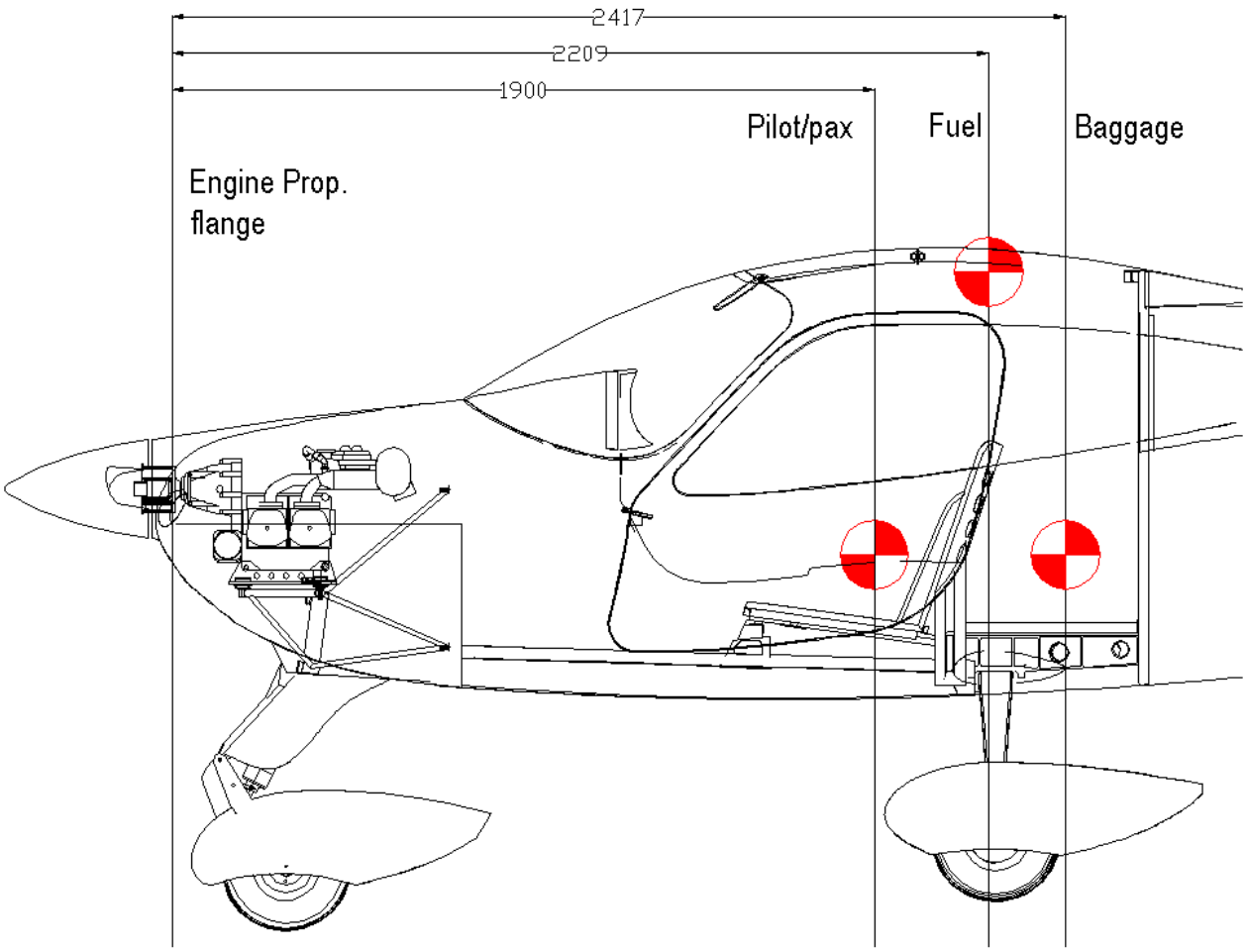


Figure 3-1

3.3 Weight and Balance

In order to compute the weight and balance of this aircraft, we have provided the following loading charts. This will reduce the amount of math you need. To compute weight and balance use the formula:

Weight * Arm = Moment.

Pilot & Passenger			
Weight (lbs)	**Moment (lbs x in)**	**Weight (lbs)**	**Moment (lbs x in)**
10	748	**260**	19448
20	1496	**270**	20196
30	2244	**280**	20944
40	2992	**290**	21692
50	3740	**300**	22440
60	4488	**310**	23188
70	5236	**320**	23936
80	5984	**330**	24684
90	6732	**340**	25432
100	7480	**350**	26180
110	8228	**360**	26928
120	8976	**370**	27676
130	9724	**380**	28424
140	10472	**390**	29172
150	11220	**400**	29920
160	11968	**410**	30668
170	12716	**420**	31416
180	13464	**430**	32164
190	14212	**440**	32912
200	14960	**450**	33660
210	15708	**460**	34408
220	16456	**470**	35156
230	17204	**480**	35904
240	17952	**490**	36652
250	18700	**500**	37400

Fuel		
Gallons	**Weight (lbs)**	**Moment**
1	6,26	544
2	12,52	1089
3	18,78	1633
4	25,04	2178
5	31,3	2722
6	37,56	3267
7	43,82	3811
8	50,08	4355
9	56,34	4900
10	62,6	5444
11	68,86	5989
12	75,12	6533
13	81,38	7078
14	87,64	7622
15	93,9	8166
16	100,16	8711
17	106,42	9255
18	112,68	9800
19	118,94	10344
20	125,2	10889
21	131,46	11433
22	137,72	11978
23	143,98	12522
24	150,24	13066
25	156,5	13611
26	162,76	14155

Baggage	
Weight (lbs)	**Moment (lbs x in)**
5	476
10	952
15	1427
20	1903
25	2379
30	2855
35	3331
40	3806
44	4187

	Meter	Inches
PAX	1.900	74,80
FUEL	2.209	86,97
BAGGAGE	2.417	95,16

To compute weight and balance:

1. Get moments from loading charts
2. Obtain the empty weight and moment from the most recent weight and balance
3. Insert the weights and the moments for fuel, occupants and baggage from the previous chart
4. Total the weight and the moment columns
5. Divide the total moment by the total weight to get the arm
6. Check that the total weight does not exceed maximum gross weight of 1320 pounds
7. Check that the arm falls within the C.G. range

CoG Position Computation Chart			
	Weight (lbs)	**Arm (inches)***	**Moment**
Empty Weight			
Fuel		86.97	
Pilot & Passenger		74.80	
Baggage		95.16	
Total **MOMENT**			
Total **WEIGHT**			
Distance "D"= **MOMENT/WEIGHT**			

*ADD to the distance "D" the value 1567mm (62in)

C.G.Range		
Meters	1.842	2.020
Inches	72.50	79.5
Max Weight	**Pounds**	**Kilograms**
	1320.00	600.00

Example Problem			
	Weight (lbs)	**Arm (inches)**	**Moment**
Empty Weight	813,5	77,13	62741,99
Fuel	150	86,97	13045,50
Pilot & Passenger	300	74,80	22440,00
Baggage	20	95,16	1903,20
Totals	1283,5	78,01	100130,69

In this example, the gross weight is under the max gross weight of 1320 pounds and the Arm or C.G. is within the C.G. range listed above.

3.3.1 Loading

Baggage compartment is designed for a maximum load of 44 pounds. Baggage size shall prevent excessive loading of utility shelf (maximum pressure 12.5 kg/dm^2). Maximum baggage size is: 80x45x32 cm . Baggage shall be secured using a tie-down net to prevent any baggage movement during maneuvers.

SECTION 4
PERFORMANCE

This section provides all necessary data for accurate and comprehensive planning of flight activity from takeoff to landing.
Data reported in graphs and/or tables were determined using:

- "Flight test data" with conditions as prescribed by ASTM and bilateral agreements
- Aircraft and engine in good condition
- Average piloting techniques

Each graph or table was determined according to ICAO Standard Atmosphere (ISA - MSL); evaluations of the impact on performance were carried out by theoretical means for:

- Airspeed
- External temperature
- Altitude
- Weight
- Type and condition of runway

4.1 Use of Performance Charts

Performance data is presented in tabular or graphical form to illustrate the effect of different variables such as altitude, temperature and weight. Given information is sufficient to plan journey with required precision and safety.
Additional information is provided for each table or graph.

4.2 Airspeed Indicator System Calibration

Graph shows calibrated airspeed V_{CAS} as a function of indicated airspeed V_{IAS}

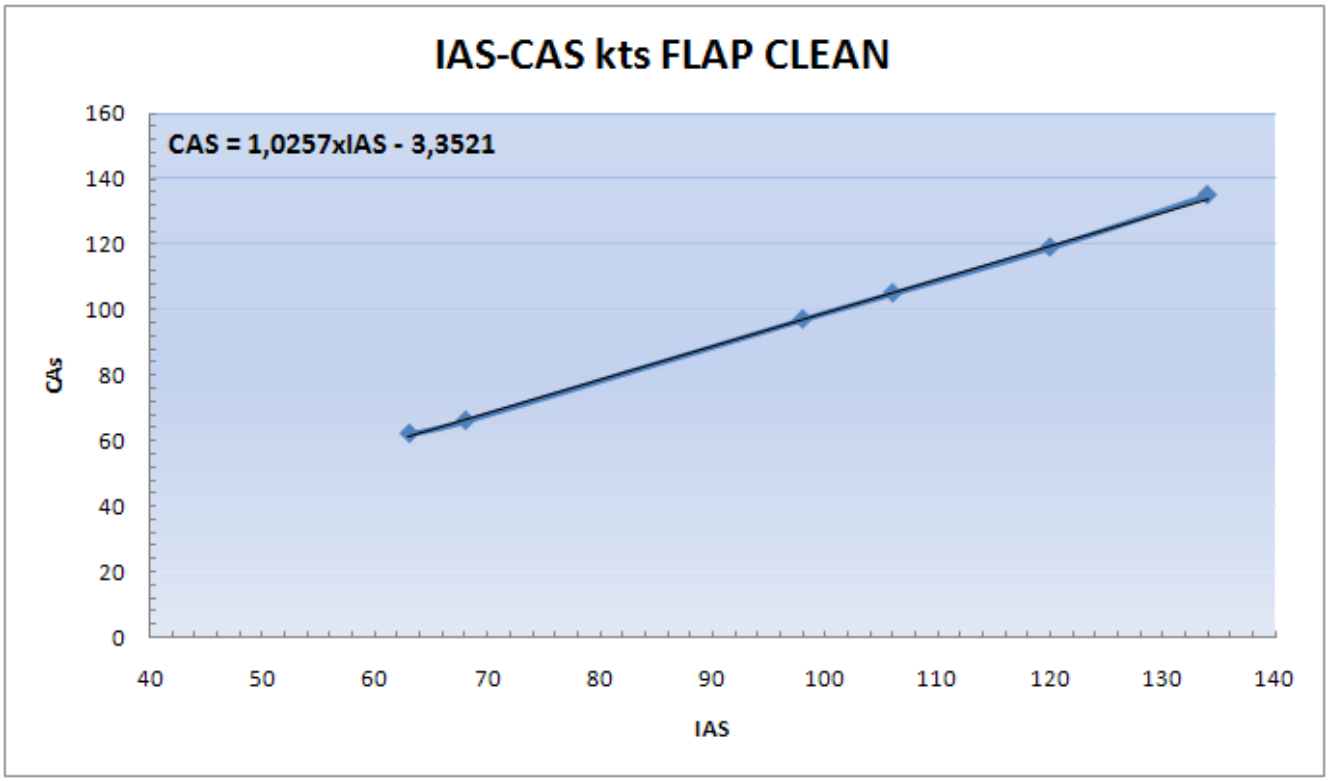


Fig. 4-1 Calibrated vs. Indicated Airspeed

The following formula gives the CAS with the **flaps full deflected**:

CAS = 1.0611xIAS – 7.7222

4.3 ICAO Chart

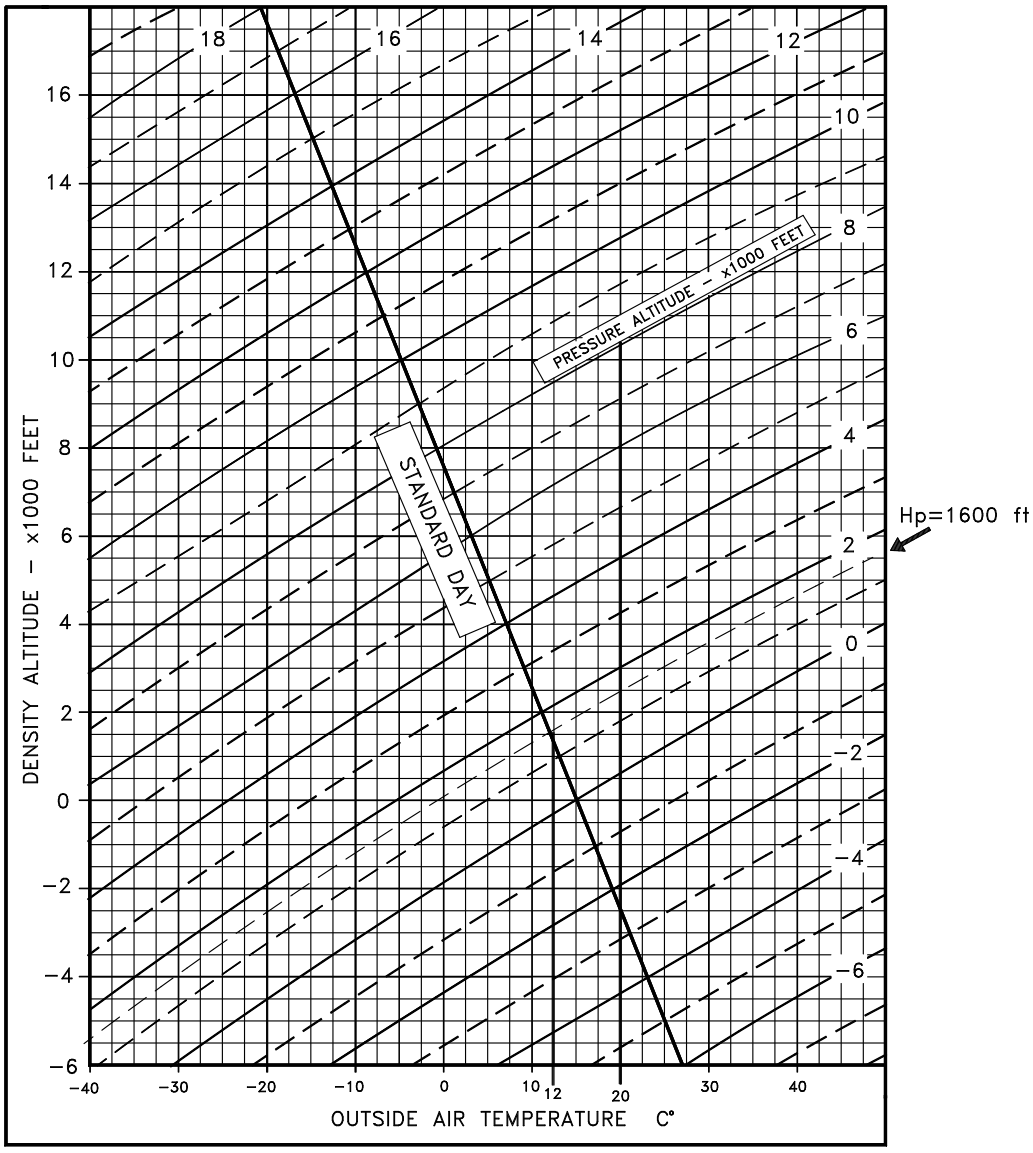


Fig. 4-2 ICAO CHART

4.4 Stall Speeds

Conditions:

- Weight 600 kg (1320 lbs)
- Throttle: idle
- No ground effect

NOTE
Altitude loss during conventional stall recovery as demonstrated during test flights is approximately 200ft with banking under 30°.

FLAPS	KIAS	KCAS
0°	**48**	45
LND	**44**	39

4.5 Crosswind

Maximum demonstrated crosswind velocity is 15 knots

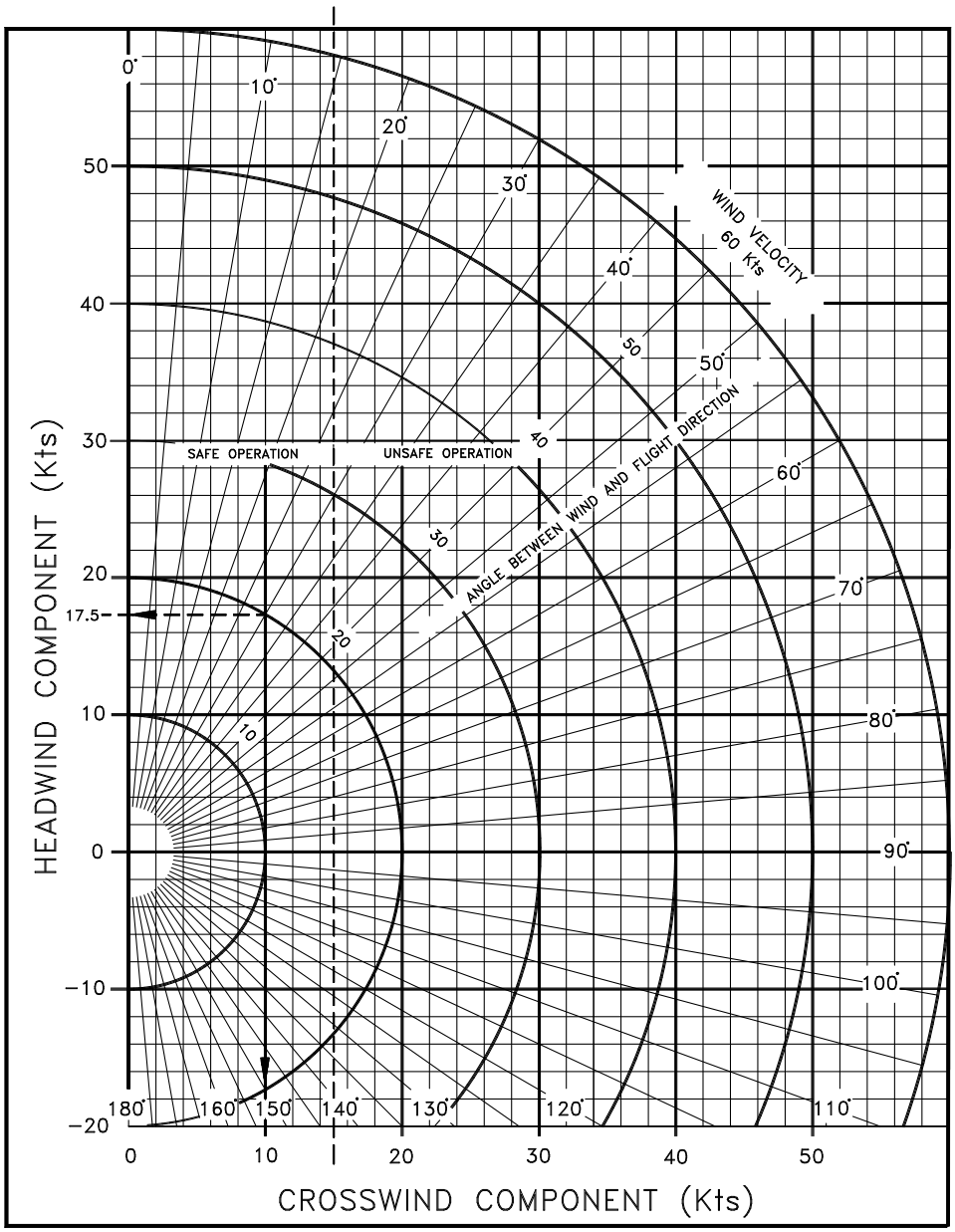


Fig. 4-3 Crosswind chart

4.6 Takeoff Performance

Weight = *600 kg*

Flaps: Take-Off (15°)
Speed at Lift-Off = *48 KIAS*
Speed Over *50ft* Obstacle = *58 KIAS*
Throttle Levers: *Full Forward*
Runway: *Grass*

Corrections
Headwind: - 5m for each kt (16 *ft/kt*)
Tailwind: + 15m for each kt (50*ft/kt*)
Paved Runway: - *6%* to Ground Roll
Runway slope: + 5% to Ground Roll for each +1%

Pressure Altitude [ft]		Distance [m]				
		Temperature [°C]				ISA
		-25	0	25	50	
S.L.	Ground Roll	139	167	197	230	**185**
	At 50 ft AGL	231	277	327	381	**307**
1000	Ground Roll	149	179	212	247	**196**
	At 50 ft AGL	247	297	351	409	**324**
2000	Ground Roll	160	192	227	264	**207**
	At 50 ft AGL	265	318	376	438	**343**
3000	Ground Roll	172	206	243	283	**219**
	At 50 ft AGL	284	341	403	470	**363**
4000	Ground Roll	184	221	261	304	**232**
	At 50 ft AGL	305	366	432	504	**384**
5000	Ground Roll	198	237	280	326	**246**
	At 50 ft AGL	327	393	464	541	**407**
6000	Ground Roll	212	255	301	351	**260**
	At 50 ft AGL	352	422	499	581	**431**
7000	Ground Roll	228	274	323	377	**276**
	At 50 ft AGL	378	454	536	624	**457**
8000	Ground Roll	245	294	347	405	**292**
	At 50 ft AGL	406	488	576	671	**485**
9000	Ground Roll	264	316	374	436	**310**
	At 50 ft AGL	437	525	620	722	**514**
10000	Ground Roll	284	341	402	469	**329**
	At 50 ft AGL	470	565	667	777	**546**

Weight = 550 *kg*

Flaps: Take-Off (15°)
Speed at Lift-Off = *48 KIAS*
Speed Over *50ft* Obstacle = *58 KIAS*
Throttle Levers: *Full Forward*
Runway: *Grass*

Corrections
Headwind: - 5m for each kt (16 *ft/kt*)
Tailwind: + 15m for each kt (50*ft/kt*)
Paved Runway: - *6%* to Ground Roll
Runway slope: + 5% to Ground Roll for each +1%

Pressure Altitude [ft]		Distance [m]				
		Temperature [°C]				ISA
		-25	0	25	50	
S.L.	Ground Roll	111	133	157	184	**148**
	At 50 ft AGL	184	221	261	304	**245**
1000	Ground Roll	119	143	169	197	**156**
	At 50 ft AGL	197	237	280	326	**259**
2000	Ground Roll	128	153	181	211	**165**
	At 50 ft AGL	211	254	300	349	**274**
3000	Ground Roll	137	164	194	226	**175**
	At 50 ft AGL	227	272	321	375	**290**
4000	Ground Roll	147	176	208	242	**185**
	At 50 ft AGL	243	292	345	402	**307**
5000	Ground Roll	158	189	223	260	**196**
	At 50 ft AGL	261	313	370	431	**325**
6000	Ground Roll	169	203	240	280	**208**
	At 50 ft AGL	280	337	398	463	**344**
7000	Ground Roll	182	218	258	300	**220**
	At 50 ft AGL	301	362	427	498	**365**
8000	Ground Roll	195	235	277	323	**233**
	At 50 ft AGL	324	389	459	535	**387**
9000	Ground Roll	210	252	298	347	**247**
	At 50 ft AGL	349	418	494	576	**410**
10000	Ground Roll	226	272	321	374	**263**
	At 50 ft AGL	375	450	532	620	**435**

Weight = *500 kg*

Flaps: Take-Off (15°)
Speed at Lift-Off = *48 KIAS*
Speed Over *50ft* Obstacle = *58 KIAS*
Throttle Levers: *Full Forward*
Runway: *Grass*

Corrections
Headwind: - 5m for each kt (16 *ft/kt*)
Tailwind: + 15m for each kt (50*ft/kt*)
Paved Runway: - *6%* to Ground Roll
Runway slope: + 5% to Ground Roll for each +1%

Pressure Altitude [ft]		Distance [m]				
		Temperature [°C]				ISA
		-25	0	25	50	
S.L.	Ground Roll	87	104	123	143	**115**
	At 50 ft AGL	144	172	204	237	**191**
1000	Ground Roll	93	111	132	153	**122**
	At 50 ft AGL	154	185	218	254	**202**
2000	Ground Roll	100	119	141	164	**129**
	At 50 ft AGL	165	198	234	273	**214**
3000	Ground Roll	107	128	151	176	**136**
	At 50 ft AGL	177	212	251	292	**226**
4000	Ground Roll	115	137	162	189	**144**
	At 50 ft AGL	190	228	269	314	**239**
5000	Ground Roll	123	148	174	203	**153**
	At 50 ft AGL	204	245	289	337	**253**
6000	Ground Roll	132	159	187	218	**162**
	At 50 ft AGL	219	263	310	362	**268**
7000	Ground Roll	142	170	201	234	**172**
	At 50 ft AGL	235	282	333	389	**285**
8000	Ground Roll	153	183	216	252	**182**
	At 50 ft AGL	253	304	359	418	**302**
9000	Ground Roll	164	197	233	271	**193**
	At 50 ft AGL	272	327	386	449	**320**
10000	Ground Roll	177	212	250	292	**205**
	At 50 ft AGL	293	351	415	484	**340**

4.7 Landing Distance

Weight = *600 kg*

Flaps: *Land (40°)*
Short Final Approach Speed = *52 KIAS*
Throttle Levers: *Idle*
Runway: *Grass*

Corrections
Headwind: - 5m for each kt (16 *ft/kt*)
Tailwind: + 15m for each kt (50*ft/kt*)
Paved Runway: - *2%* to Ground Roll
Runway slope: - 2.5% to Ground Roll for each +1%

Pressure Altitude [ft]		Distance [m]				
		Temperature [°C]				ISA
		-25	0	25	50	
S.L.	Ground Roll	135	149	162	176	**157**
	At 50 ft AGL	344	358	371	385	**366**
1000	Ground Roll	140	154	168	182	**162**
	At 50 ft AGL	349	363	377	391	**371**
2000	Ground Roll	145	160	175	189	**166**
	At 50 ft AGL	354	369	384	398	**375**
3000	Ground Roll	151	166	181	196	**171**
	At 50 ft AGL	360	375	390	405	**380**
4000	Ground Roll	156	172	188	204	**177**
	At 50 ft AGL	365	381	397	413	**386**
5000	Ground Roll	162	179	195	212	**182**
	At 50 ft AGL	371	388	404	421	**391**
6000	Ground Roll	169	186	203	220	**188**
	At 50 ft AGL	378	395	412	429	**397**
7000	Ground Roll	175	193	210	228	**194**
	At 50 ft AGL	384	402	419	437	**403**
8000	Ground Roll	182	200	219	237	**200**
	At 50 ft AGL	391	409	428	446	**409**
9000	Ground Roll	189	208	227	246	**206**
	At 50 ft AGL	398	417	436	455	**415**
10000	Ground Roll	197	216	236	256	**213**
	At 50 ft AGL	406	425	445	465	**422**

Weight = *550 kg*

Flaps: *Land (40°)*
Short Final Approach Speed = *52 KIAS*
Throttle Levers: *Idle*
Runway: *Grass*

Corrections
Headwind: - 5m for each kt (16 *ft/kt*)
Tailwind: + 15m for each kt (50*ft/kt*)
Paved Runway: - *2%* to Ground Roll
Runway slope: - 2.5% to Ground Roll for each +1%

Pressure Altitude [ft]		Distance [m]				
		Temperature [°C]				ISA
		-25	0	25	50	
S.L.	Ground Roll	114	125	136	148	**132**
	At 50 ft AGL	323	334	345	357	**341**
1000	Ground Roll	118	130	141	153	**136**
	At 50 ft AGL	327	339	350	362	**345**
2000	Ground Roll	122	134	147	159	**140**
	At 50 ft AGL	331	343	356	368	**349**
3000	Ground Roll	127	139	152	165	**144**
	At 50 ft AGL	336	348	361	374	**353**
4000	Ground Roll	131	145	158	171	**148**
	At 50 ft AGL	340	354	367	380	**357**
5000	Ground Roll	136	150	164	178	**153**
	At 50 ft AGL	345	359	373	387	**362**
6000	Ground Roll	142	156	170	185	**158**
	At 50 ft AGL	351	365	379	394	**367**
7000	Ground Roll	147	162	177	192	**163**
	At 50 ft AGL	356	371	386	401	**372**
8000	Ground Roll	153	168	184	199	**168**
	At 50 ft AGL	362	377	393	408	**377**
9000	Ground Roll	159	175	191	207	**173**
	At 50 ft AGL	368	384	400	416	**382**
10000	Ground Roll	165	182	198	215	**179**
	At 50 ft AGL	374	391	407	424	**388**

Weight = *500 kg*

Flaps: *Land (40°)*
Short Final Approach Speed = *52 KIAS*
Throttle Levers: *Idle*
Runway: *Grass*

Corrections
Headwind: - 5m for each kt (16 *ft/kt*)
Tailwind: + 15m for each kt (50*ft/kt*)
Paved Runway: - *2%* to Ground Roll
Runway slope: - 2.5% to Ground Roll for each +1%

Pressure Altitude [ft]		Distance [m]				
		Temperature [°C]				ISA
		-25	0	25	50	
S.L.	Ground Roll	94	103	113	122	**109**
	At 50 ft AGL	303	312	322	331	**318**
1000	Ground Roll	97	107	117	127	**112**
	At 50 ft AGL	306	316	326	336	**321**
2000	Ground Roll	101	111	121	131	**116**
	At 50 ft AGL	310	320	330	340	**325**
3000	Ground Roll	105	115	126	136	**119**
	At 50 ft AGL	314	324	335	345	**328**
4000	Ground Roll	109	120	131	142	**123**
	At 50 ft AGL	318	329	340	351	**332**
5000	Ground Roll	113	124	136	147	**126**
	At 50 ft AGL	322	333	345	356	**335**
6000	Ground Roll	117	129	141	153	**130**
	At 50 ft AGL	326	338	350	362	**339**
7000	Ground Roll	122	134	146	158	**134**
	At 50 ft AGL	331	343	355	367	**343**
8000	Ground Roll	126	139	152	165	**139**
	At 50 ft AGL	335	348	361	374	**348**
9000	Ground Roll	131	145	158	171	**143**
	At 50 ft AGL	340	354	367	380	**352**
10000	Ground Roll	136	150	164	178	**148**
	At 50 ft AGL	345	359	373	387	**357**

4.8 Climb Performance

CLIMB RATE IN CLEAN CONFIGURATION

CONDITIONS:

- Flap: 0°
- Engine: MCP
- V_Y = 78 KIAS [77KCAS]

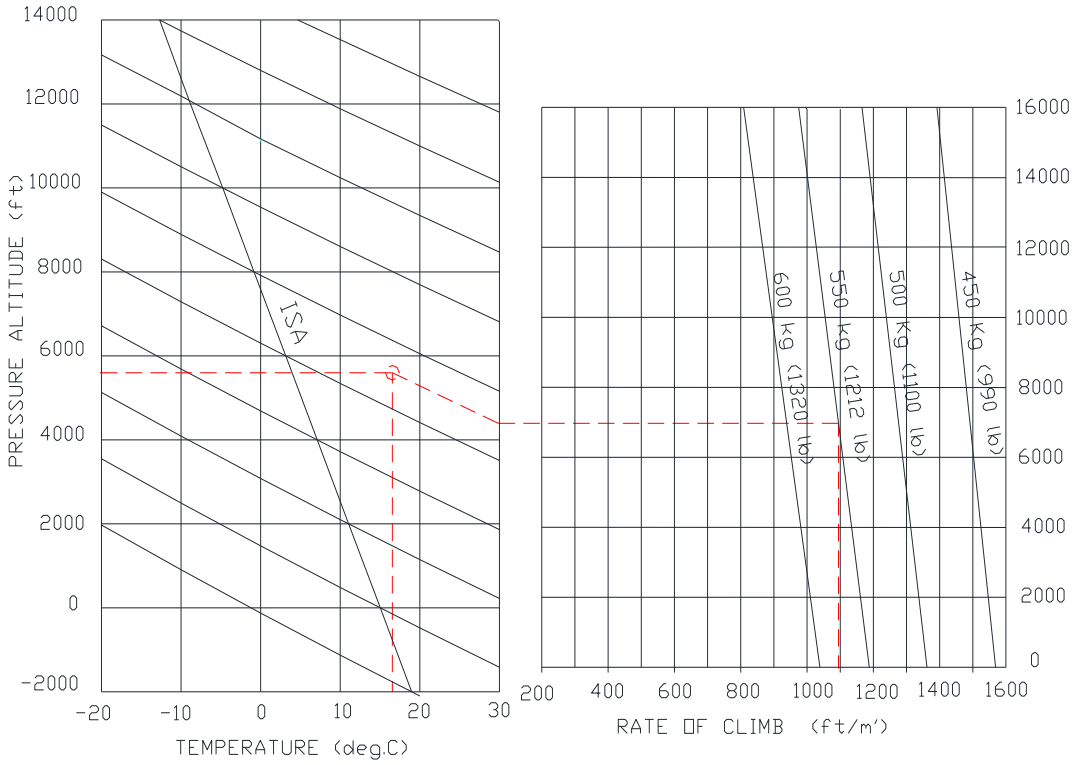


Fig. 4-5 CLIMB

⇒ *Example:*

Given

O.A.T. = 17°*C*
Pressure altitude = 5600 *ft*
Weight = 550 *Kg (1212 lb)*

Find

Rate of climb = *1095 ft/min*

4.9 Cruise

Maximum takeoff weight = 600 kg (1320 lbs)
Fuel tanks 2x52 liters (13.7 gal) (less the unusable fuel = 1.1gal)

ALL ENDURANCE DATA (HOURS AND n.m.) ARE GIVEN WITH A RESERVE OF 30'
(FOR EXAMPLE: THE FIRST ROW INDICATES A RANGE OF 7.1hrs + 0.5hr RESERVE)

Pressure altitude H_P: **0** *ft* *OAT: +15°C*

Power setting	Engine Speed RPM	Speed KTAS	Consumption (gal/h)	Endurance (hrs) (including 30' reserve)	Range (N.m.)
55%	4300	93	3.3	7.1	663
65%	4800	102	4.6	5.0	505
75%	5000	108	5.3	4.3	461
100%	5500	120	6.9	3.2	380
115%	5800	127	8.6	2.4	308

Pressure altitude H_P: **2000***ft* *OAT: +11°C*

Power setting	Engine Speed RPM	Speed KTAS	Consumption (gal/h)	Endurance (hrs) (including 30' reserve)	Range (N.m.)
54%	4300	93	3.2	7.5	695
64%	4800	102	4.4	5.2	527
74%	5000	109	5.3	4.3	466
99%	5500	122	6.8	3.2	391
114%	5800	129	8.5	2.5	320

Pressure altitude H_P: **4000***ft* *OAT: +7°C*

Power setting	Engine Speed RPM	Speed KTAS	Consumption (gal/h)	Endurance (hrs) (including 30' reserve)	Range (N.m.)
52%	4300	93	2.8	8.4	782
62%	4800	103	4.2	5.5	561
72%	5000	109	5.1	4.4	480
97%	5500	123	6.7	3.3	404
112%	5800	130	8.2	2.6	336

Pressure altitude H_P: **6000***ft* *OAT: +3°C*

Power setting	Engine Speed RPM	Speed KTAS	Consumption (gal/h)	Endurance (hrs) (including 30' reserve)	Range (N.m.)
51%	4300	93	2.7	9.0	837
61%	4800	103	4.1	5.6	578
71%	5000	110	5.1	4.5	492
96%	5500	124	6.6	3.3	412
111%	5800	131	8.0	2.6	346

Pressure altitude H_P: **8000***ft OAT: -1°C*

Power setting	Engine Speed RPM	Speed KTAS	Consumption (gal/h)	Endurance (hrs) (including 30' reserve)	Range (N.m.)
50%	4300	93	2.5	9.7	903
60%	4800	104	4.0	5.8	603
70%	5000	111	5.0	4.6	505
95%	5500	125	6.5	3.4	421
110%	5800	133	7.9	2.7	358

Pressure altitude H_P: **10000***ft OAT: -5°C*

Power setting	Engine Speed RPM	Speed KTAS	Consumption (gal/h)	Endurance (hrs) (including 30' reserve)	Range (N.m.)
48%	4300	92	2.1	11.6	1070
58%	4800	104	3.7	6.2	648
68%	5000	111	4.8	4.7	524
93%	5500	126	6.4	3.4	434
108%	5800	134	7.7	2.8	374

Pressure altitude H_P: **12000***ft OAT: -9°C*

Power setting	Engine Speed RPM	Speed KTAS	Consumption (gal/h)	Endurance (hrs) (including 30' reserve)	Range (N.m.)
47%	4300	91	1.9	13.0	1181
57%	4800	104	3.6	6.5	674
67%	5000	112	4.7	4.8	540
92%	5500	127	6.3	3.5	442
107%	5800	135	7.5	2.8	383

4.10 Balked Landing

RATE OF CLIMB: BALKED LANDING

CONDITIONS:

Maximum weight = 600 kg (1320 lb) Engine: MTOP

Flaps: 35° V_x 15 flaps = 66 KIAS [62 KCAS] RC ~ 1000 ft/min

NOTE

During balked landing maneuver, flaps should be retracted immediately after applying full power.

4.11 Effects of Rain and Insects

Flight tests have demonstrated that neither rain nor insect impact build-up on leading edge has caused substantial variations on aircraft's flight qualities.

SECTION 5
EMERGENCY PROCEDURES

Section 6 includes checklists and detailed procedures to be used in the event of emergencies. Emergencies caused by a malfunction of the aircraft or engine are extremely rare if appropriate maintenance and pre-flight inspections are carried out.
In case of emergency, suggestions of the present section should be considered and applied as necessary to correct the problem.
Before operating the aircraft, the pilot should become thoroughly familiar with the present manual and, in particular, with the present section. Further, a continued and appropriate training program should be provided.
In case of emergency the pilot should act as follows:

- Keep control of the airplane
- Analyze the situation
- Apply the pertinent procedure
- Inform the Air Traffic Control if time and conditions allow

AIRSPEEDS FOR SAFE OPERATION IN EMERGENCY SITUATIONS	**KIAS**	**KCAS**
Engine failure after takeoff (15 degrees of flaps)	**61** Knots	**59** Knots
Engine failure during flight	**65** Knots	**61** Knots
Maneuvering speed	**98**Knots	**97** Knots
Maximum glide	**65** Knots	**61**Knots

5.1 Engine Failures

If an emergency arises, the basic guidelines described in this section should be considered and applied as necessary to correct the problem.

5.1.1 Engine Failures on Ground

5.1.1.1 ENGINE FAILURE DURING TAKEOFF RUN

Throttle: ..... IDLE
Brakes: ..... APPLY AS NEEDED
Ignition Switches: ..... OFF
FLAP: ..... RETRACTED
Master switch: ..... OFF
When the airplane is under control:
Fuel selector valve: ..... OFF

5.1.2 Engine Failure during Flight

5.1.2.1 ENGINE FAILURE IMMEDIATELY AFTER TAKEOFF

Airspeed: ..... 61 KIAS [57KCAS]
Find a suitable place on the ground to land safely. The landing should be planned straight ahead with only small changes in directions not exceeding 45° to the left or 45° to the right
Flaps: ..... AS REQUIRED
Throttle: ..... AS REQUIRED
At touch down
Ignition Switches: ..... OFF
Master switch: ..... OFF
Fuel selector valve: ..... OFF

5.1.2.2 IRREGULAR ENGINE RPM

Throttle: ..... CHECK
Engine gauges: ..... CHECK
Fuel quantity indicators: ..... CHECK
If the engine continues to run irregularly:
Fuel selector valve: ..... LEFT or RIGHT
If the engine continues to run irregularly:
Land as soon as possible

5.1.2.3 LOW FUEL PRESSURE

If the fuel pressure indicator falls below the (0.15 bar) limit:
Fuel quantity indicators: ..... CHECK
If the engine continues to run irregularly:
Fuel selector valve: ..... LEFT or RIGHT
If the fuel pressure continues to be low:
Land as soon as possible

5.1.2.4 LOW OIL PRESSURE

Throttle Lever:..... REDUCE Minimum pratical
Oil temperature:..... CHECK
If the temperature tends to increase:
If the temperature is within the green arc:..... LAND as soon as possible
If the temperature is out of the green arc:..... LAND as soon as possible and be alert for impending engine failure

5.1.2.5 IN-FLIGHT ENGINE RESTART

Altitude:..... Preferably below 4000 ft
Fuel selector valve:..... LEFT or RIGHT
Throttle:..... MIDDLE POSITION
Ignition switches: ..... ON
Master Switch:..... START
If the restart attempt fails:
Procedure for a forced landing: ..... APPLY
In case of an engine restart:
Land as soon as possible

5.1.2.6 ENGINE OUT GLIDE

Flaps:..... RETRACT
Speed:..... 72 KIAS [70KCAS]
Electric equipments:..... OFF
In-flight engine restart:..... If conditions permit, try to restart several times

NOTE

Glide ratio is 12.8 therefore with 1000 ft of altitude; it is possible to cover ~2 nautical miles in zero wind conditions.

5.2 Smoke and Fire

5.2.1 Engine Fire while parked

Fuel selector valve:..... OFF
Ignition Switches:..... OFF
Master switch: ..... OFF
Parking brake: ..... SET
Escape rapidly from the aircraft

Without remove engine cowl, use a CO2 or dust extinguisher to extinguish fire, directing the extinguish jet toward the cowl air intakes
ATTENTION: DON'T USE WATER to extinguish fire and not open engine cowl until you are absolutely sure to have extinguished fire. If you not have a properly extinguisher you can always use, with engine cowl closed, a wool cover, sand or soil, to try to choke fire.

5.2.2 Engine Fire during Takeoff

Throttle:..... IDLE
Brakes:..... AS NEEDED
With the airplane is under control:
Fuel selector valve:..... OFF
Cabin heating: ..... OFF
Ignition Switches:..... OFF
Master switch: ..... OFF
Parking brake: ..... SET
Escape rapidly from the aircraft

5.2.3 Engine Fire in-flight

Cabin heat: ..... OFF
Fuel selector valve:..... OFF
Throttle:..... FULL IN until the engine stops running
Cabin vents:..... OPEN
Ignition Switches:..... OFF
Do not attempt an in-flight restart
Procedure for a forced landing: ..... APPLY

5.2.4 Cabin Fire during Flight

Cabin heat: ..... OFF
Cabin vents:..... OPEN
Doors:..... OPEN, if necessary
Master switch: ..... OFF
Try to choke the fire. Direct the fire extinguisher towards flame base
Procedure for a forced landing: ..... APPLY

5.3 Landing Emergency

FORCED LANDING WITHOUT ENGINE POWER

Establish:..... 72 KIAS [70KCAS]
Locate most suitable terrain for emergency landing, upwind if possible
Fuel selector valve:..... OFF
Ignition Switches:..... OFF
Safety belts: ..... TIGHTEN
Doors:..... UNLATCHED
Landing assured:
Flaps:..... AS NECESSARY
Master switch: ..... OFF
Touchdown Speed:..... 45 KIAS [40KCAS]

POWER-ON FORCED LANDING

Descent:..... ESTABLISH
Establish:..... 65 KIAS [61KCAS]
Flaps:..... AS NECESSARY
Select terrain area most suitable for emergency landing and flyby checking for obstacles and wind direction
Safety belts: ..... TIGHTEN
Doors:..... UNLOCK
Landing assured:
Flaps:..... AS NECESSARY
Fuel selector valve:..... OFF
Ignition Switches:..... OFF
Master switch: ..... OFF

LANDING WITH A FLAT NOSE TIRE

Pre-landing checklist:..... COMPLETE
Flaps:..... FULL
Land and maintain aircraft NOSE HIGH attitude as long as possible

LANDING WITH A FLAT MAIN TIRE

Pre-landing checklist:..... COMPLETE
Flaps:..... FULL

NOTE
Align the airplane on the opposite side of runway to the side with the defective tire to compensate for change in direction, which is to be expected during final rolling.
Touchdown with the GOOD TIRE FIRST and hold aircraft with the flat tire off the ground as long as possible.

5.4 Recovery from Unintentional Spin

Power: ..... IDLE
Ailerons: ..... NEUTRAL (and Flaps Up)
Rudder: ..... FULL OPPOSITE
Elevator: ..... THROUGH NEUTRAL
HOLD THESE INPUTS UNTIL ROTATION STOPS, THEN:
Rudder: ..... NEUTRAL
Elevator: ..... RECOVER
NOTE
Use elevator control to recover to straight and level or a climbing attitude
NOTE
The first letter in each of the four primary recovery inputs spells out the acronym, PARE (pronounced “pair”). PARE is a convenient memory aid that points the way to spin recovery. The PARE format mimics the most docile spin configuration possible, affording the greatest response to recovery inputs. Errant control inputs that may aggravate the spin are avoided in the process. As a mental checklist, it forces you to focus on the appropriate recovery actions. Calling each item out loud also tends to reinforce the physical inputs.

5.5 Electric Power System Malfunction

Electric power supply system malfunctions may be avoided by carrying out inspections as scheduled and prescribed in the Service Manual. Causes for malfunctions are hard to establish but, in any case, problems of this nature must be dealt with immediately.

5.6 Failures indicated on the annunciator panel

5.6.1 ALTERNATOR LIGHT

Alternator (ALT) light may illuminate for a faulty alternator. If the Alternator light illuminates proceed as follows:

- LAND as soon as possible
- Continue flight on battery power alone; the battery is capable of supplying the electrical system for about 20 minutes with normal flight electric loads including operation of flap and trim.

5.6.2 TCU BOOST LIGHT

If the red TCU boost lamp illuminates one of the following conditions have happened to the engine:

- Maximum admissible boost pressure exceeded (red lamp will continuously illuminated);

  Proceed as follows:

  1. Reduce Throttle until RPM and manifold pressure within operating limits
- Full throttle operation exceeds 5' (red lamp will blink)

  Proceed as follows:

  2. Reduce Throttle until RPM and manifold pressure at least to maximum continuous speed.

NOTE
Record the event in the aircraft logbook with the duration and exact time of exceeding limits

5.6.3 TCU CAUTION LIGHT

5.6.3.1 SUDDEN DROP OF BOOST PRESSURE AND RPM

If Amber caution lamp of TCU is blinking proceed as follows:

- If LOUD NOISE or BANG is heard: a fracture of the turbo is likely
- Monitor oil pressure
- LAND as soon as possible

NOTE
Record the event in the aircraft logbook with the duration and exact time of exceeding limits

5.6.3.2 SUDDEN RISE OF BOOST PRESSURE AND RPM

If Amber caution lamp of TCU is blinking proceed as follows:

- Immediately reduce engine speed until boost pressure and rpm are within the limits
- Limited flight operations as wastegate may be fully closed and control of boost pressure is only possible via throttle lever
- LAND as soon as pratical

NOTE
Record the event in the aircraft logbook with the duration and exact time of exceeding limits

5.6.3.3 PERIODICAL RISE&DROP OF BOOST PRESSURE AND RPM

If Amber caution lamp of TCU is NOT blinking proceed as follows:

- **Switch OFF** the servo motor of the engine for a moment (max 5 sec). Then the operation should stabilize
- If previous step does not stabilize the operations, **switch OFF** the servo motor completely and keep the engine within the limits using throttle
- Limited flight operations as boost pressure control is no more possible
- LAND as soon as pratical

NOTE
Record the event in the aircraft logbook.

5.7 Trim System Failure

5.7.1 LOCKED CONTROL

In case the trim control should not respond, act as follows:
Fuses / breakers ..... CHECK
LH/RH switch ..... CHECK for correct position
Airspeed ..... Adjust speed to control aircraft without excessive stick force
Land aircraft as soon as possible

5.8 Other Emergencies

5.8.1 UNINTENTIONAL FLIGHT INTO ICING CONDITIONS

Get away from icing conditions by changing altitude or direction of flight in order to reach an area with warmer external temperature.
Increase rpm to avoid ice formation on propeller blades.
Cabin heat: ..... ON

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

SECTION 6
NORMAL PROCEDURES

Section 6 contains checklists and the procedures for normal operation.

6.1 Removing and Reinstalling the Engine Cowling

6.1.1 Upper Cowling

Parking brake: .....ON
Fuel selector valve:.....OFF
Ignition Switches:.....OFF
Master switch: .....OFF

- Unlatch all four butterfly Cam-locks mounted on the top cowling by rotating them 90° counter clockwise while slightly pushing inwards.
- Remove the screws holding the top canopy to the bottom.
- Remove top engine cowling paying attention to propeller shaft passing through nose.

To reinstall:

- Rest cowling horizontal insuring proper fitting of nose base reference pins.
- Reinstall the four screws.
- Secure latches by applying light pressure, check for proper assembly and fasten Cam-locks.

WARNING

Butterfly Cam-locks are locked when tabs are horizontal and open when tabs are vertical. Verify tab is below latch upon closing.

6.1.2 Lower Cowling

After disassembling upper cowling

- Move the propeller to a horizontal position
- Using a standard screwdriver, press and rotate 90° the two Cam-locks positioned on lower cowling by the firewall.
- Disconnect the ram-air duct from the NACA intake. Pull out the first hinge pin positioned on the side of the firewall, then, while holding cowling, pull out second hinge pin; remove cowling with downward motion.

For installation follow reverse procedure

6.2 Checklist Procedures

6.2.1 Pre-Flight Inspection

Before each flight, it is necessary to carry out a complete inspection of the aircraft starting with an external inspection followed by an internal inspection.

6.2.1.1 Cabin Inspection

All required paperwork: ..... ONBOARD
Weight and balance: ..... CHECK
Safety belts used to lock controls: ..... RELEASE
Flight controls: ..... CHECK
Check for freedom of movement and proper direction
Parking brake: ..... SET
Friction lock: ..... CHECK
Throttle: ..... IDLE
Ignition Switches: ..... OFF
Master switch: ..... ON
Generator light: ..... ON
Aux. Alternator switch (if installed): ..... ON
Alternator light: ..... ON
Flaps: ..... EXTEND
Visually check that flaps are fully extended and instrument indication is correct
Trim: ..... CHECK
Activate control in both directions checking for travel limits and instrument indication
Stall warning: ..... CHECK
Navigation lights and strobe light: ..... CHECK

NOTE
Strobe lights won't work without the engine running

Landing light: ..... CHECK
Fuel Tank levels: ..... CHECK
Master switch: ..... OFF
First Aid kit: ..... CHECK
Hand-held fire extinguisher: ..... CHECK
Emergency hammer: ..... CHECK

WARNING
Fuel level indicated by the fuel quantity indicators (on the instrument panel) is only indicative. For flight safety, pilot should verify actual fuel quantity visually in tanks before takeoff.

6.2.1.2 External Inspection

It is best to follow to follow the external inspection in the station order outlined in fig. 6-1 so nothing is missed.
Visual inspection is defined as follows: check for defects, cracks, detachments, excessive play, and unsafe or improper installation as well as for general condition. For control surfaces, visual inspection also involves additional checks for freedom of movement and security.

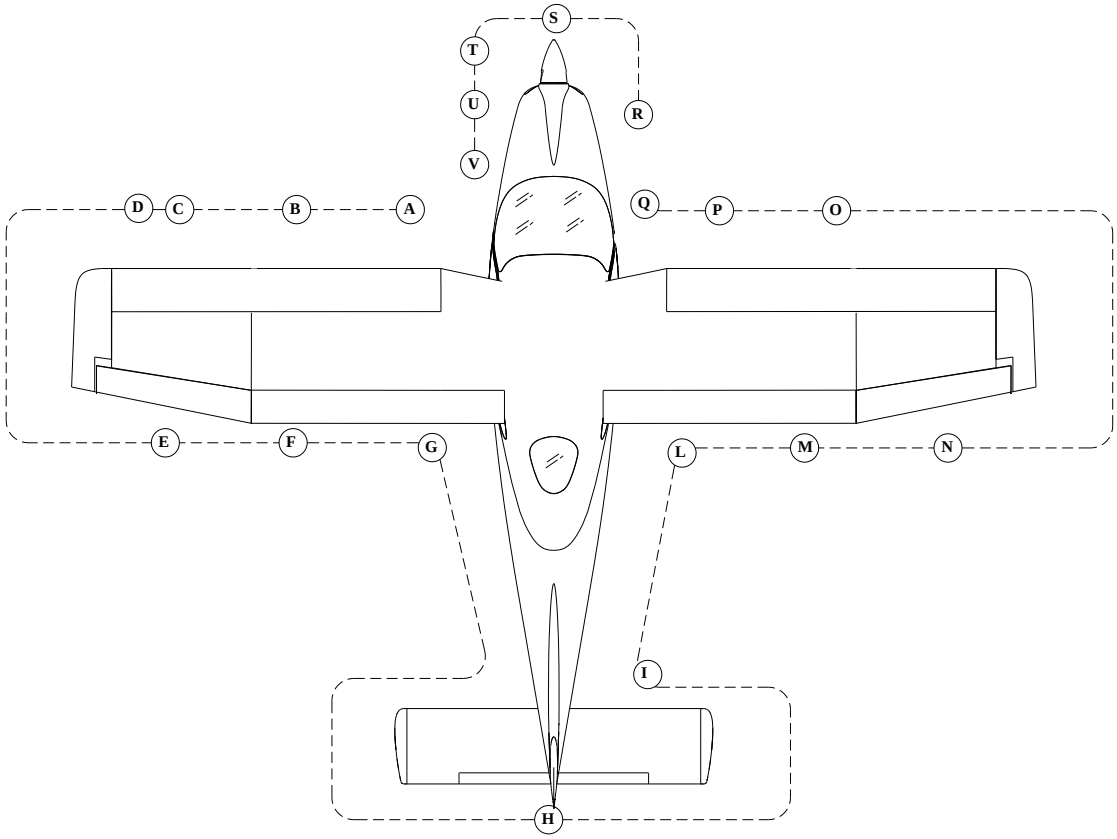


FIG. 6-1

A. Left fuel filler cap: CHECK visually for desired fuel level and secure
B. Pitot tube: Remove pitot tube cover and check that the pitot tube mounted on the left wing is unobstructed. Do not blow inside pitot tube.
C. Left side leading edge and wing skin: CHECK for damage
D. Left aileron: CHECK for damage, freedom of movement: Left tank vent: CHECK for obstructions
E. Left flap and hinges: CHECK security
F. Left main landing gear: CHECK inflation 40 PSI (2.7 bar), tire condition, alignment, fuselage skin condition
G. Horizontal tail and tab: CHECK for damage, freedom of movement
H. Vertical tail and rudder: CHECK for damage, freedom of movement (**NOTE:** do not move rudder unless nosewheel is lifted off the ground)
I. Right side main landing gear: CHECK inflation 40 PSI (2.7 bar), tire condition, alignment, fuselage skin condition
J. Right flap and hinges: CHECK security
K. Right aileron: CHECK for damage, freedom of movement; Right side tank vent: check for obstructions
L. Right leading edge and wing skin: CHECK for damage
M. Stall indicator micro switch : Check freedom of movement, turn on Master switch and check cabin acoustic warning signal is operative, turn off Master switch

N. Right side fuel filler cap: CHECK visually for desired fuel level and secure
O. Nose wheel strut and tire: CHECK inflation 32 PSI (2.2 bar); tire condition and condition of rubber shock absorber discs. Check the right static port for obstructions.
P. Propeller and spinner condition: CHECK for nicks and security
Q. Open both engine cowlings and perform the following checklist:
- Check no foreign objects are present
- Check the cooling system for losses, check coolant reservoir level, and insure radiator honeycomb is unobstructed
- Check oil system for losses, check oil reservoir level, and insure radiator honeycomb is unobstructed
- Check fuel system. Open fuel valve and inspect fuel lines for leaks. Drain Gascolator using a cup to collect fuel. Make sure that valve is closed and not leaking. Check for water or other contaminants.
- Engine mounts: CHECK integrity
- Intake system: Check connection and integrity of air intake system, visually inspect that ram air intake is unobstructed
- All parts: Check they are secure or safety wired

WARNING
Drain fuel with aircraft parked on level surface

R. Engine cowlings:..... CLOSE
S. Landing Light: ..... CHECK
T. Tow bar and chocks: ..... REMOVE

6.2.1.3 BEFORE START

Parking brake: ..... SET
Flight controls: ..... CHECK
Throttle:..... IDLE
Friction lock: ..... ADJUST
Master switch: ..... ON
Generator light: ..... ON
Aux. Alternator switch: ..... ON
Aux. Alternator light: ..... ON
Trim control: ..... CENTERED
Trim switch: ..... LEFT
Landing light:..... CHECK
Fuel quantity:..... CHECK

NOTE
Compare the fuel levels read by the fuel quantity indicators with the quantity present in the tanks

WARNING
Be sure that the fuel valve is NOT in OFF position

Master switch: ..... OFF
Seat position and safety belts: ..... ADJUST
If flying solo:
Passenger belts: ..... SECURED / CLEAR OF CONTROLS
Doors:..... CLOSED AND LOCKED

6.2.1.4 STARTING ENGINE

Brakes:..... SET
Fuel selector valve:..... LEFT or RIGHT

Master switch: ..... ON
Throttle: ..... IDLE
Choke: ..... AS NEEDED
Propeller area: ..... CLEAR

WARNING
Check to insure no person or object is present in the area close to propeller

Strobe light: ..... ON
Ignition Switches: ..... ON
Master Switch: ..... START

NOTE
Starter duty cycle: max of 10 seconds on followed by a cooling period of 2 minutes off

Oil pressure: ..... CHECK

WARNING
If oil pressure doesn't rise within 10 seconds, shut down engine.
The maximum oil pressure for cold conditions is 7 bar.

Engine instruments: ..... CHECK
Choke: ..... OFF
Engine rpm: ..... 2000-2500 rpm
Fuel pressure: ..... CHECK

6.2.1.5 BEFORE TAXI

Radio and Avionics: ON
Altimeter: SET
Flight Instruments: SET, CHECK
Parking brake: OFF

6.2.1.6 TAXI

Brakes: CHECK
Flight instruments: CHECK

6.2.1.7 BEFORE TAKE-OFF

Parking brake: ON
Fuel valve: ON (LH or RH)
Engine instruments: CHECK

- Oil temperature: ..... 90°-110 ° C
- Cylinder head temperature: ..... 90° - 135 °C
- Oil pressure: ..... 2 - 5 bar
- Fuel pressure: ..... 0.15 – 0.35 bar

Generator light: OFF
External Alternator light: OFF
Throttle: 4000 RPM
To test ignition systems:

- Maximum RPM drop with only one ignition ..... 300 rpm

Throttle: IDLE
Fuel quantity indicators: CHECK
Fuel selector valve: LEFT or RIGHT
Flaps: T/O (15°)
Flight controls: CHECK

Trim: CENTER
Seat belts: FASTENED
Doors: CLOSED AND LOCKED
Transponder (if installed): ALT

6.2.1.8 TAKEOFF AND CLIMB

Parking brake: OFF
Taxi to line-up:
Magnetic compass and DG: CHECK, SET
Throttle: FULL
NOTE
Static RPM is approximately 5100 ± 250 rpm
Engine instruments: CHECK
Vr (Rotation speed): ~ 48 KIAS [44 KCAS]
NOTE
Rotate to takeoff attitude and accelerate to a climb speed of 60 knots with 15° Flaps
Above 300' AGL:
Flaps: RETRACT
Establish Vy clean: 78 KIAS [77KCAS]
Trim: ADJUST
Cruise climb: 75 – 80 KIAS

NOTE

On the LH side of the cockpit there is a switch under red cover, normally in the ON position (The cover opens downward). This switch is required by ROTAX on airplanes certificated in order to allow the pilot to exclude the waste gate servo motor in some conditions as TAKE-OFF and initial CLIMB. Refer to the ROTAX Operators Manual for the description of the procedure to use the-switch.

6.2.1.9 CRUISE

Reaching cruise altitude:
Throttle: SET (5500 RPM Max)
Engine instruments: CHECK

- Oil temperature: ..... 90°-110 ° C
- Cylinder head temperature: ..... 90° - 135 °C
- Oil pressure: ..... 2 - 5 bar
- Fuel pressure: ..... 0.15 – 0.35 bar

CAUTION

Normal position of the fuel selector is LEFT or RIGHT. Check fuel balance and fuel pressure. Bear in mind that the fuel return line is only on the LEFT tank, so it is suitable, if the fuel level is FULL on both tanks, to position the valve on LEFT tank.

NOTE

Check fuel gauges frequently with one tank shut off to prevent fuel starvation.

6.2.1.10 BEFORE LANDING

Landing light (if installed): ON
On downwind leg: Speed and flaps at your discretion based on traffic, etc.
Traffic: CHECK
Flaps: AS DESIRED
Optimal touchdown speed (full flaps): 45 KIAS

6.2.1.11 BALKED LANDING

Throttle: MTOP

Airspeed: 66 KIAS [62 KCAS]
Flaps position: LN / 35 degrees
Airspeed: 66 KIAS [62 KCAS]
Trim: ADJUST
Above 300' AGL:
Flaps: RETRACT
Establish Vy clean: 78 KIAS [77KCAS]
Trim: ADJUST
After takeoff checklist: ..... COMPLETE

6.2.1.12 AFTER LANDING

Taxi at an appropriate speed for conditions
Flaps: UP
Transponder: STANDBY

6.2.1.13 ENGINE SHUT DOWN

Keep engine running at 2500 rpm for about one minute in order to reduce latent heat. This can be accomplished during taxi.

NOTE
Do not ride the brakes to facilitate cool down. If necessary, stop for one minute with parking brake on to cool the engine.

Electrical equipment (except the Strobe Light): OFF
Ignition switches: OFF
Strobe light: OFF
Master switch: OFF
Fuel valve: OFF
Parking brake: ..... ON
Chocks: ..... INSTALL
Parking brake: ..... OFF

6.2.1.14 POSTFLIGHT CHECK

Pitot tube cover: INSTALL
Aircraft: TIED DOWN
Control locks: INSTALL
Chocks: ..... INSTALL
Parking brake: OFF
Doors: CLOSED AND LOCKED

SECTION 7
GROUND HANDLING & SERVICE

This section contains factory-recommended procedures for proper ground handling and routine care and servicing. It also identifies certain inspection and maintenance requirements, which must be followed if the aircraft is to retain its new-plane performance and dependability. It is recommended to follow a planned schedule of lubrication and preventive maintenance based on climatic and flying conditions encountered locally.

7.1 Aircraft Inspection Periods

Inspection intervals occur at 100 hours and in accordance with special inspection schedules, which are added to regularly, scheduled inspections. Correct maintenance procedures are described in the aircraft's Service Manual or in the engine's Line Maintenance Manual.

7.2 Aircraft Alterations or Repairs

For repairs, refer to aircraft's Line Maintenance Manual.

7.3 Ground Handling

7.3.1 Towing

The use of a towbar is recommended. But, pulling on the propeller near the axle you can safely maneuver the aircraft. Aircraft may be steered by turning rudder or, for steep turns, by pushing lightly on tailcone to lift nose wheel.

7.3.2 Parking and Tiedown

When parking airplane outdoors, head it into the wind and set the parking brake. It is preferable to use chocks if available. Tie the airplane down in severe weather and high wind conditions. Tie-down ropes shall be fastened to the wing attachments and anchoring shall be provided by ramp tie-downs. Nose gear fork can be used for front tie-down location or the tail can be tied down with the optional Tiedown point.
Secure the flight controls to avoid possible weathervane damage to moving surfaces. Seatbelts may be used to latch control stick to prevent its movement.

7.3.3 Jacking

Given the light empty weight of the aircraft, lifting one of the main wheels can easily be accomplished even without the use of hydraulic jacks. For an acceptable procedure please refer to the Line Maintenance Manual.

7.3.4 Leveling

Aircraft leveling may become necessary to check wing incidence, dihedral or the exact location of CG. Longitudinal leveling verification is obtained by placing a level longitudinally, over the aft part of the baggage compartment floor. See maintenance manual for instructions.

7.3.5 Road Transport

It is recommended to secure tightly all aircraft components onto the cart to avoid damage during transport. Minimum cart size is 7x2.5 meters. It is suggested to place wings under the aircraft's bottom, secured by specific clamps. Secondary components such as stabilator and struts shall be protected from accidental hits using plastic or other material. For correct rigging and de-rigging procedure, refer to the Line Maintenance Manual.

7.3.6 Cleaning and Care

To clean painted surfaces, use a mild detergent such as shampoo normally used for car finish; use a soft cloth for drying. The plastic windshield and windows should never be dusted when dry; use lukewarm soapy water and dry using chamois only. It is possible to use special glass detergents but, in any case, never use products such as gasoline, alcohol, acetone or other solvents.
To clean cabin interior, seats, upholstery and carpet, it is generally recommended to use foam-type detergents.

7.3.7 Ground anchorage

The airplane should be moored for immovability, security and protection. FAA Advisory Circular AC 20-35C, Tiedown Sense, contains additional information regarding preparation for severeweather, tiedown, and related information. The following proceduresshould be used for the proper mooring of the airplane:

1. Head the airplane into the wind if possible.
2. Retract the flaps.
3. Chock the wheels.
4. Lock the control stick using safety belts.
5. Secure tie-down ropes to the wing tie-down rings and to the tailring at approximately 45-degree angles to the ground, in longitudinal direction (see Fig.8-1).

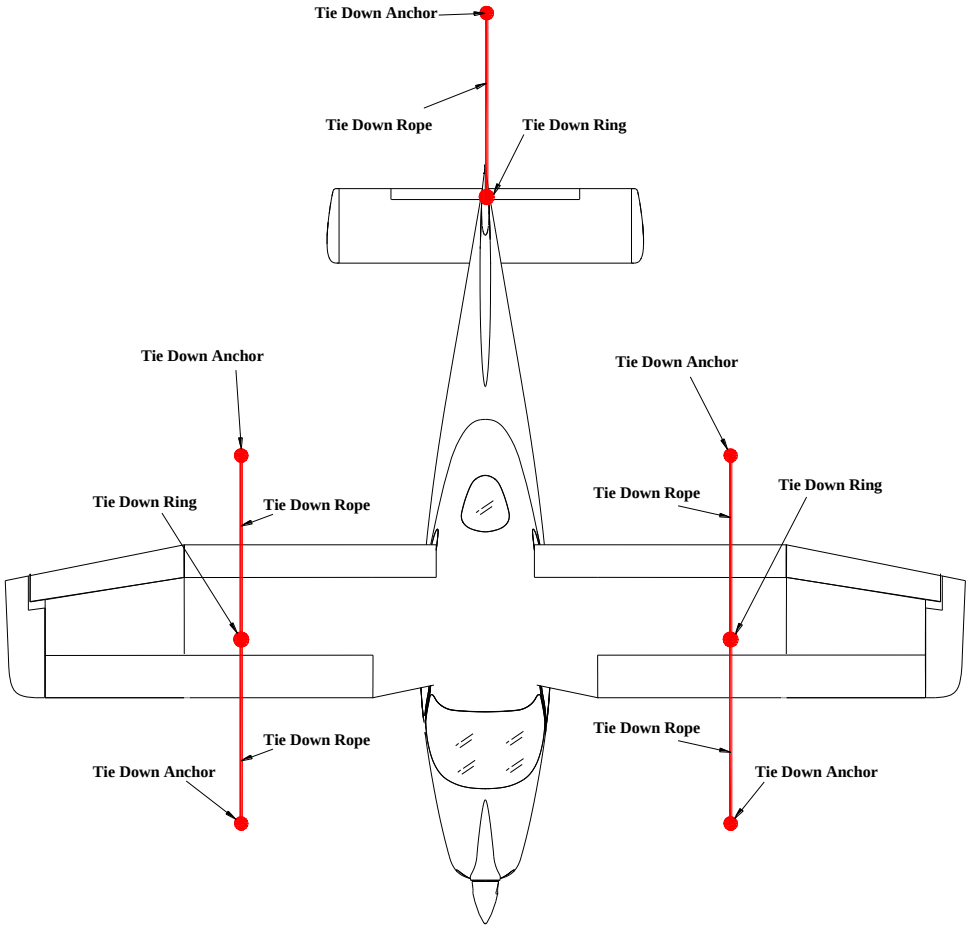


Fig. 7-1. CABLE POCITIONING

Section 8
PLACARDS & MARKINGS

8.1.1 Magnetic compass compensation table

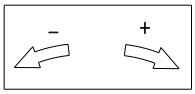
To compensate the deviation errors of the magnetic compass, the following correction table is located just below the compass:

For	N	30	60	E	120	150
Steer						
For	S	210	240	W	300	330
Steer						

DATE RADIO ON AIRPATH

8.1.2 Engine throttle friction

A throttle friction lock is located on the side of central to keep the desired throttle friction setting.
The following placard (23x11 upper; 21x11 lower) is positioned near the friction lock knob.



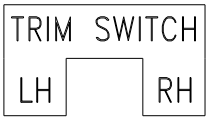
THROTTLE
LOCK

8.1.3 Cabin heat

The cabin heat (if available) control knob is located on central tunnel panel area just near the throttle control. The cabin's heat control is marked with this placard (20x11mm).

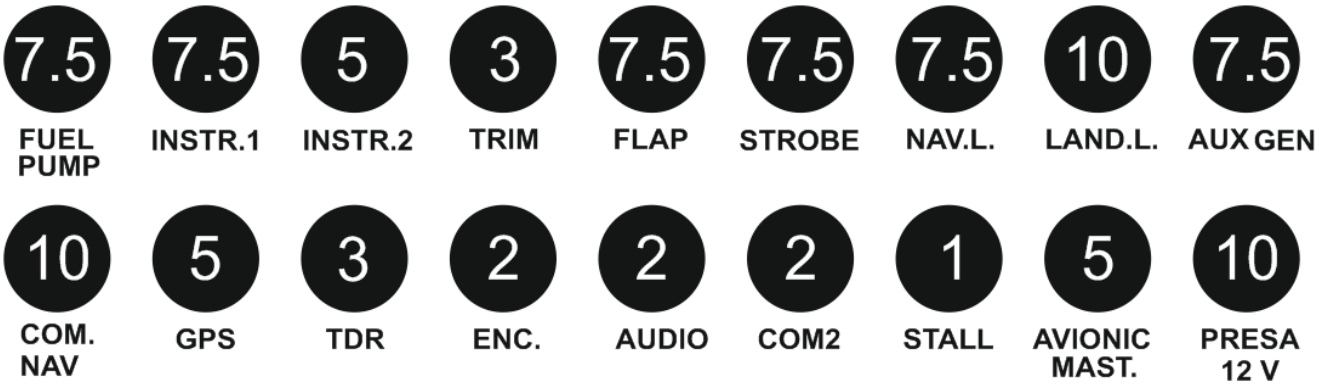
8.1.4 Trim switch

The trim shunt control is located on the upper left area of the instrument panel alternatively allocating trim control to either Rh or Lh control stick. The following placard (25x14mm) is positioned just above of it.



8.1.5 Breakers

Breakers are located on the lower/right side of the instrument panel and each fuse is individually marked as follows:



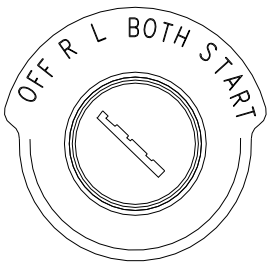
Depending on the specific equipment installed on the a/c the type and position of the breakers could vary from the above shown.

8.1.6 Flaps

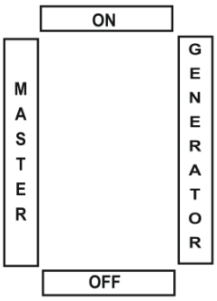
'The flap control switch is located on the lower portion of the instrument panel. The following placards (15x10mm the upper, 6x15mm the lower) are just next to it.

8.1.7 Generator, Master, Starter

On the lower part of the instrument panel are located, in order:
The starter, marked with a placard:



For the generator and master switches:



8.1.8 Choke

Located above the choke lever:

8.1.9 Generator light

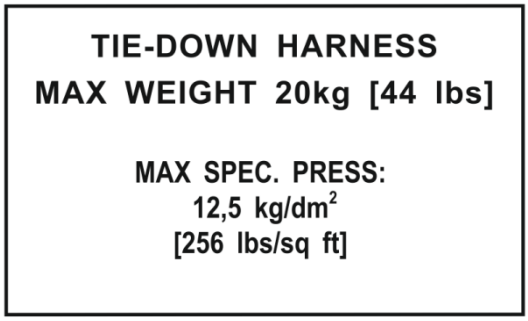
A generator warning light is located on the upper/right side of the instrument panel and it is marked with the following label.

8.1.10 Fuel selector valve

Fuel shutoff valve is located on central section of cockpit panel. It controls the fuel coming from the tanks making the pilot able to switch LEFT TANK, RIGHT TANK and OFF.

8.1.11 Baggage compartment

A placard (30x50mm) indicating the maximum weight and to fasten the baggage's retain harnesses, is present visible into the baggage compartment.

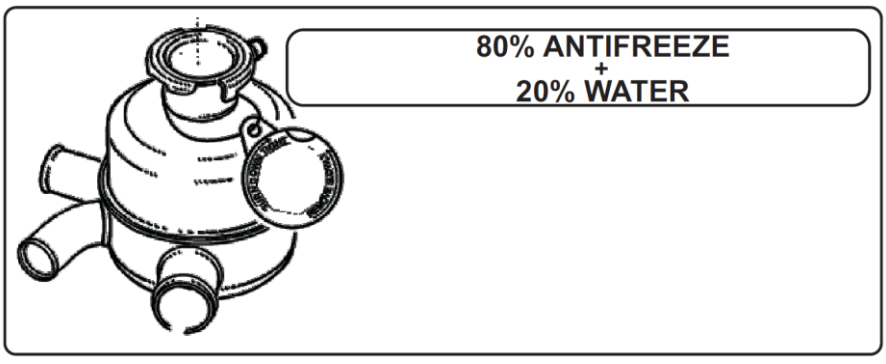


8.1.12 Oil tank reservoir

On the oil tank reservoir is present one placards (70x70) indicating the type and quantity of engine's oil stored into the reservoir, see placard and its installation in par. 8.1.13.

8.1.13 Cooling system overflow tank

Located on the overflow tank inside the engine cowling left side, are located the following placards (102x10mm) (60x15):



8.1.14 Brake oil reservoir

On the cap of the brake's oil tank, is a placard indicating the type of oil that must be used.

SPECIFY
HYDRAULIC OIL
MIL H5606

8.1.15 Tire pressures

On each steel spring leaf is a placard indicating the main tires inflating pressure (18x6mm):

40 PSI

On the nose gear is located the following placard indicating the nose tire inflating pressure (18x6mm):

32 PSI

8.1.16 Doors

Next latch is located a placard that show the correct turn of key for open the door (30x20mm):

Inside the doors, in the upper side, is located the following placard (4x20mm):

CLOSE

OPEN

8.1.17 Identification plate

The following placard is located on the pilot side of the empennage forward of the stabilator and made of stainless steel.

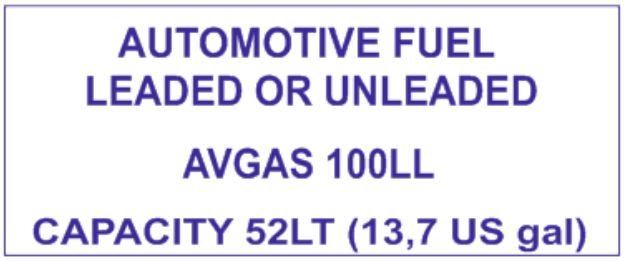
Builder:
CostruzioniAeronauticheTecnam
Model: P2008
Serial number: XXX

8.1.18 Static port

On each static port is locate a placard diam 20mm:

8.1.19 Fuel Tank

Next each fuel tank is the following placard (40x100 mm)



8.1.20 Limitation Placards

Next to the airspeed indicator is the following placard (6x52mm).

Maneuvering speed V_A = 98 KIAS

On the pilot's panel a placard will state the following:

NO INTENTIONAL SPINS

Located on the instrument panel is the following placard:

This aircraft was manufactured in accordance with Light Sport aircraft airworthiness standards and does not conform to standard category airworthiness requirements.

Section 9
SUPPLEMENT LIST

9.1 Introduction

This Section concerns the supplemental manuals of additional (or optional) instrumentation equipping the ***P2008 TC*** and/or information and limitations related to installed equipment configuration or needed to fit local national rules.

9.2 Supplements list

Aircraft S/N:	Registration marks**:**		Date:		
SUPPLEMENTS LIST					
Sup. No.	**Title**	**Rev. no.**	**Date**	**APPLICABLE:**	
				YES	**NO**
S1	Airspeeds increment	0	25/11/2013	☐	☐
S2	MTV-33-1 Variable Pitch Propeller	0	02/08/2017	☐	☐

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SUPPLEMENT No. S1

AIRSPEED INCREMENT

Record of Revisions

Any revisions to the present Manual, except actual weighing data, must be recorded in the following table. New or amended text in the revised pages will be indicated by a black vertical line in the left-hand margin;

Log of Revisions

Revision No.	Date released	Chapters	Approved By
00	25/11/2013	All	TECNAM

List of Effective Pages

Page	Date	Page	Date
1	25/11/2013		
2	"		
3	"		
4	"		
5	"		
6	"		
7	"		
8	"		
9	"		
10	"		
11	"		
12	"		
13	"		
14	"		

Table of Contents

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Introduction

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

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

NOTE: *TECNAM reminds that flights in yellow arcs should be only performed in smooth with caution.*

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Supplement S1: pages replacement instructions

Section 1 –General

Refer to Basic AFM Section 1.

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Supplement S1: pages replacement instructions

Section 2 –Operating Limitations

Apply following pages replacement procedure:

Supplement S1 – LIMITATIONS page		**Basic AFM Section 2 page**
A29	**REPLACES**	Page 29
A30	**REPLACES**	Page 30

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SECTION 2
OPERATING LIMITATIONS

2. Introduction

Section 2 includes operating limitations, instrument markings, and basic placards necessary for safe operation of the P2008, its engine, standard systems and standard equipment.

2.1.1 Airspeed Limitations

Airspeed limitations and their operational significance are shown below:

SPEED		KCAS	KIAS	REMARKS
V_{NE}	Never exceed speed	141	145	Never exceed this speed in any operation
V_{NO}	Maximum Structural Cruising Speed	112	113	Never exceed this speed unless in smooth air, and then only with caution
V_A	Maneuvering speed	97	98	Do not make full or abrupt control movements above this speed as this may cause stress in excess of limit load factor
V_{FE}	Maximum flap extended speed	68	71	Never exceed this speed for any given flap setting
V_H	Maximum speed	119	120	Maximum speed in level flight at max continuous power (MSL)
V_X	Best Angle Climb	63	65	The speed which results in the greatest gain of altitude in a given horizontal distance
V_Y	Best Rate Climb	76	78	The speed which results in the greatest gain of altitude in a given time

2.1.2 Airspeed Indicator Markings

Airspeed indicator markings and their color code are explained in the following table:

MARKING	KIAS	SIGNIFICANCE
White arc	40 – 71	Flap Operating Range (lower limit is V_{S0}, at maximum weight and upper limit is maximum speed permissible with full flaps)
Green arc	48– 113	Normal Operating Range (lower limit is V_{S1} at maximum weight and flaps at 0° and upper limit is maximum structural speed V_{NO})
Yellow arc	113-145	Operations must be conducted with caution and only in smooth air
Red line	145	Maximum speed for all operations

2.1.3 Powerplant Limitations

The following table lists operating limitations for aircraft installed engine:
Engine manufacturer: Bombardier Rotax GmbH.
Engine model: 914 UL

Maximum power: (see table below)

	Max Power kW (hp)	**Max rpm. rpm prop.(engine)**	**Time max. (min)**
Max.	84.5 (113)	2388 (5800)	5
Max cont.	73.5 (98.5)	2265 (5500)	-

NOTE
Static engine rpm should be 5100 ± 250 under no wind conditions.

2.1.4 Temperatures

Max cylinder heads	135° C
Max coolant	120° C
Min. / Max. Oil	50° C / 130° C
Oil normal operating temperature (approx.)	90° C – 110° C

2.1.5 Oil Pressure

Minimum	0.8 bar	Below 3500 RPM
Normal	2.0 - 5.0 bar	Above 3500 RPM

2.1.6 Operating & starting temperature range

OAT Min	-25° C
OAT Max	+50° C

Warning
Admissible pressure for cold start is 7 bar maximum for short periods.

For your information
Bar is a unit of measure. The word comes from the Greek baros, "weighty." We see the same root in our word, barometer, for an instrument measuring atmospheric pressure. One bar is just a bit less than the average pressure of the Earth's atmosphere, which is 1013.25 bar. In practice, meteorologists generally record atmospheric pressure in millibars (mb). In English-speaking countries, barometric pressure is also expressed as the height, in inches, of a column of mercury supported by the pressure of the atmosphere. In this unit, one bar equals 29.53 inches of mercury (in Hg) or 14.5 PSI.

2.1.7 Fuel Pressure

Min	0.15 bar (2.2 PSI)
Max	0.35 bar (5.08PSI)

Supplement S1: pages replacement instructions

Section 3 – Weight & Balance

Refer to Basic AFM Section 3.

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Supplement S1: pages replacement instructions

Section 4 –Performance

Apply following pages replacement procedure:

Supplement S1 – Performance page		**Basic AFM Section 4 page**
A41	**REPLACES**	Page 41
A42	**REPLACES**	Page 42
A43	**REPLACES**	Page 43
A44	**REPLACES**	Page 44

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4.4 Airspeed Indicator System Calibration

Graph shows calibrated airspeed V_{CAS} as a function of indicated airspeed V_{IAS}

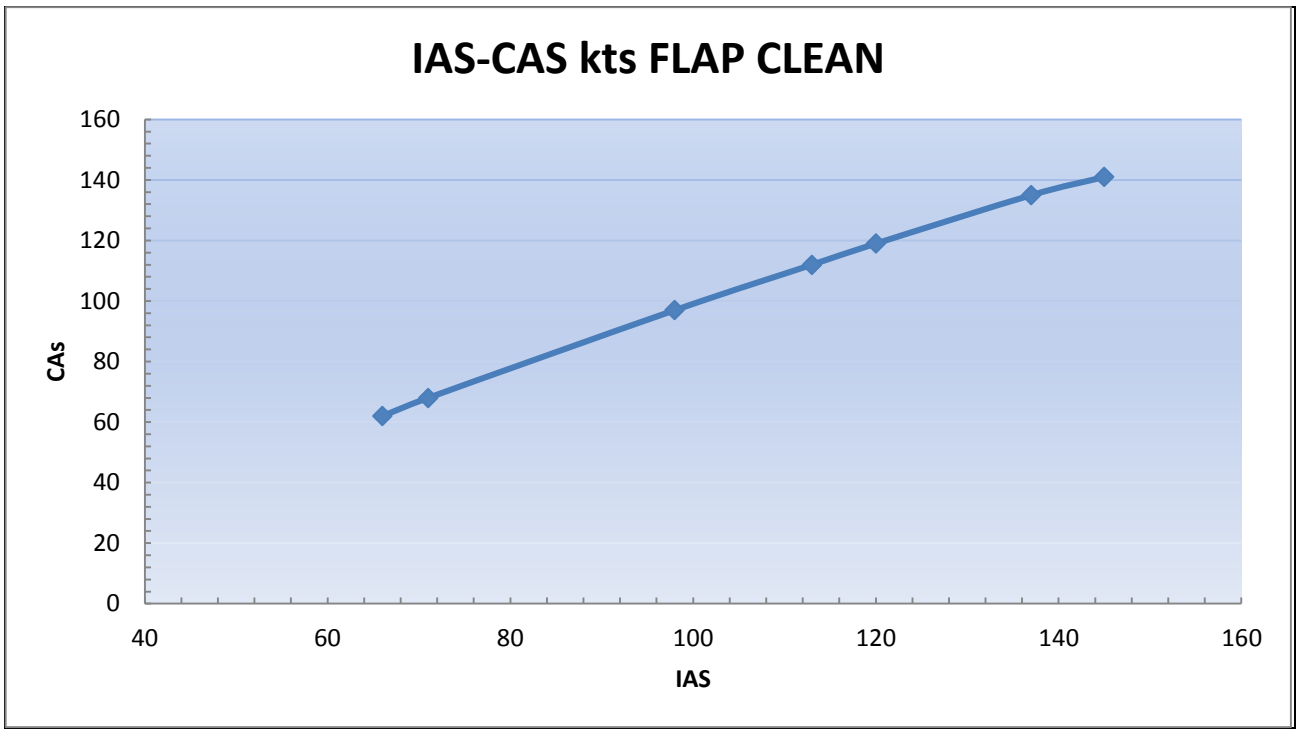

Fig. 4-1 Calibrated vs. Indicated Airspeed

The following formula gives the CAS with the **flaps full deflected**:

CAS = 1.0611xIAS – 7.7222

4.5 ICAO Chart

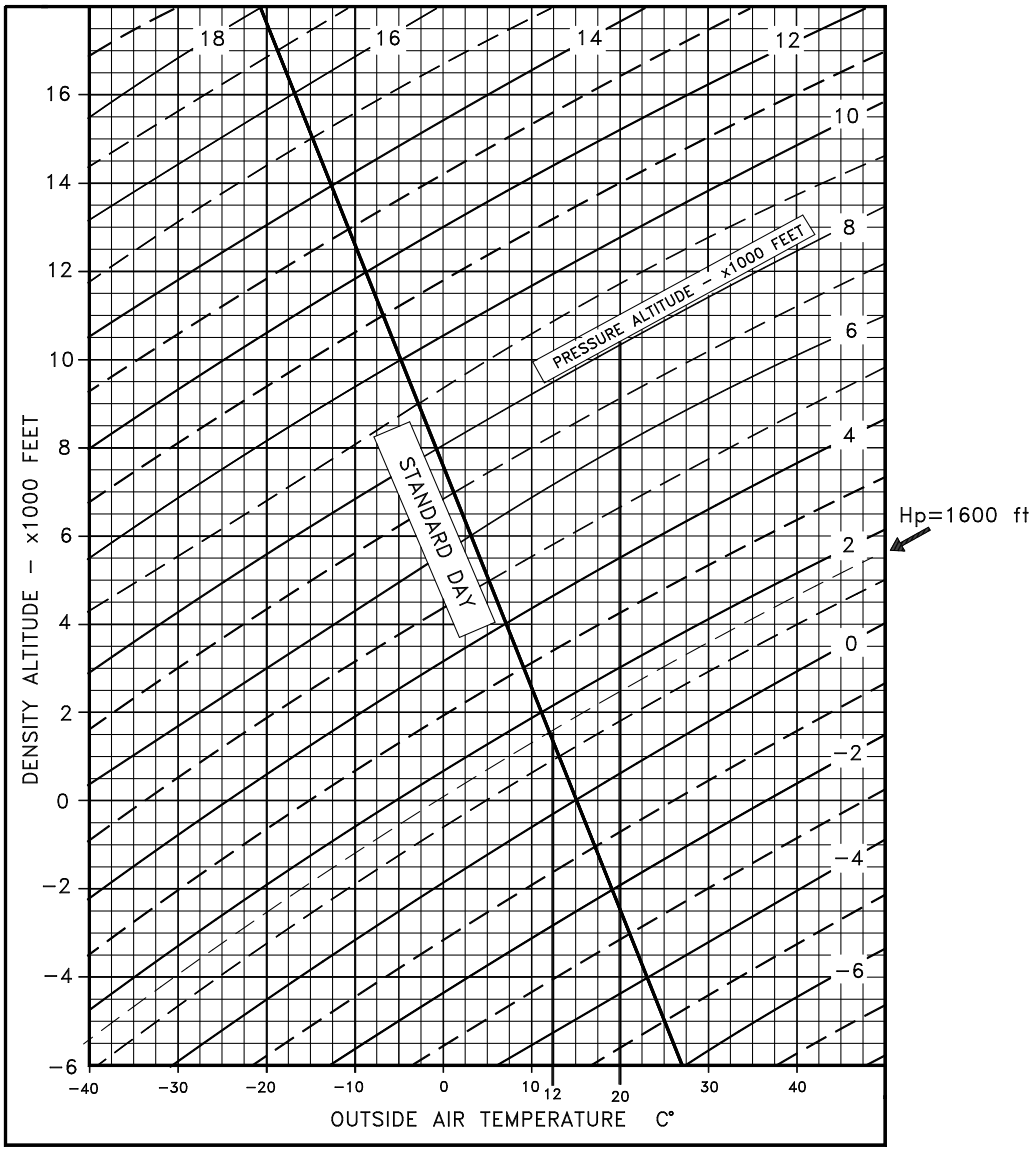

Fig. 4-2 ICAO CHART

4.6 Stall Speeds

Conditions:

- Weight 600 kg (1320 lbs)
- Throttle: idle
- No ground effect

NOTE
Altitude loss during conventional stall recovery as demonstrated during test flights is approximately 200ft with banking under 30°.

FLAPS	KIAS	KCAS
0°	**48**	45
LND	**40**	34

4.7 Crosswind

Maximum demonstrated crosswind velocity is 15 knots

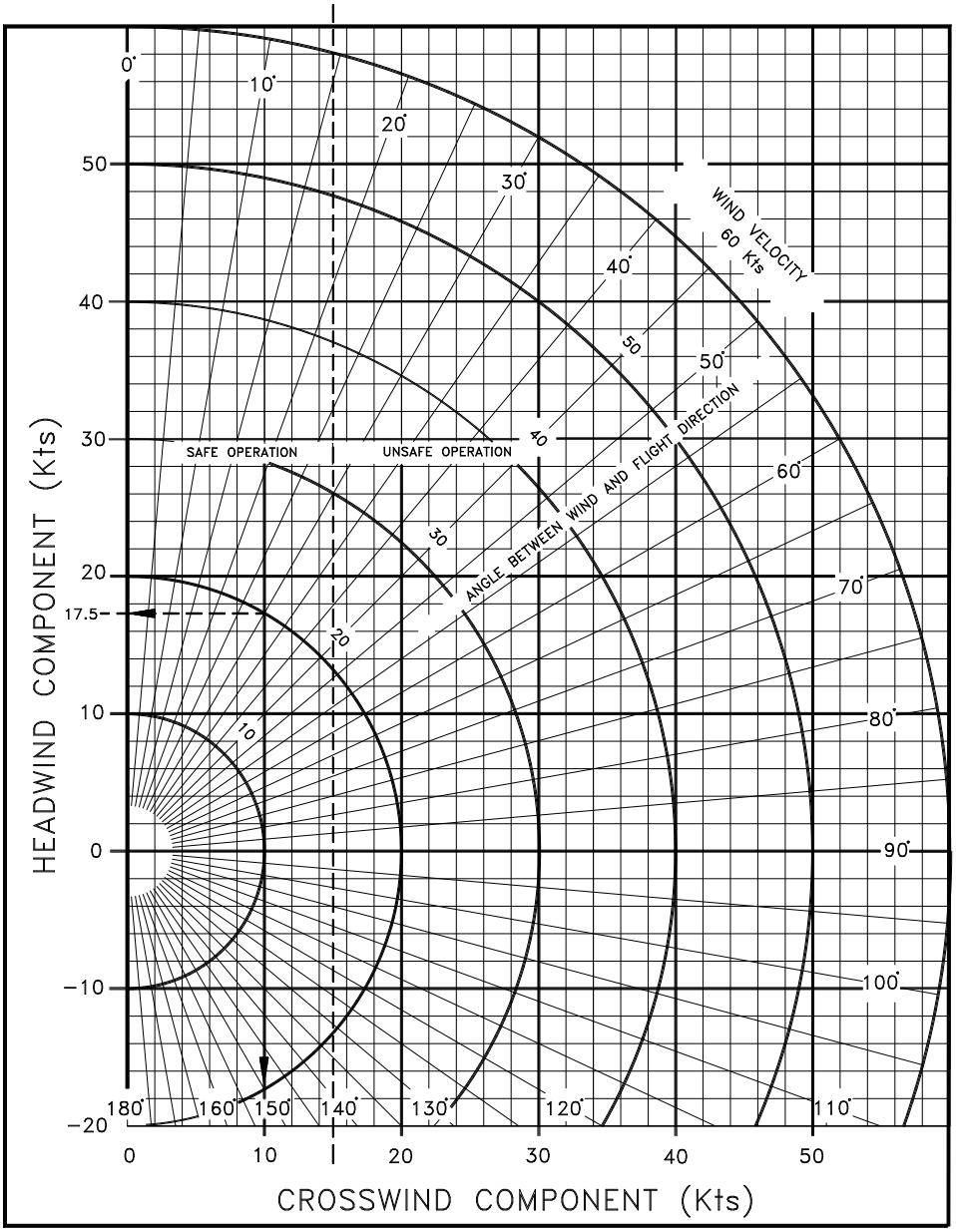

Fig. 4-3 Crosswind chart

SUPPLEMENT No. S2

MTV-33-1 VARIABLE PITCH PROPELLER

Record of Revisions

Any revisions to the present Manual, except actual weighing data, must be recorded in the following table. New or amended text in the revised pages will be indicated by a black vertical line in the left-hand margin;

Log of Revisions

Revision No.	Date released	Chapters	Approved By
00	2/8/2017	All	TECNAM

List of Effective Pages

Page	Date	Page	Date
1	2/8/2017		
2	“		
3	“		
4	“		
5	“		
6	“		
7	“		
8	“		
9	“		
10	“		
11	“		
12	“		
13	“		
14	“		
15	“		

Table of Contents

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Introduction

The information contained herein supplements or supersedes the basic Aircraft Flight Manual: detailed instructions are provided to allow the owner for replacing the basic AFM pages containing information for the safe and efficient operability of the MTV-33-1 propeller.

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

NOTE: *TECNAM reminds that flights in yellow arcs should be only performed in smooth with caution.*

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Supplement S2: pages replacement instructions

Section 1 –General

Apply following pages replacement procedure:

Supplement S2 – GENERAL pages		**Basic AFM Section 1 pages**
MT15	**REPLACE**	15
MT22	**REPLACES**	22

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1.4.2 Allowed Propellers

Manufacturer:	GT Tonini	Sensenich	MT Propeller
Model:	GT-2/173/VRR-FW101	2A0R5R70EN (2 Blades) - 3B0R5R68C (3 Blades)	MTV-33-1-A/175-200
Number of blades:	2	2/3 Blades	2
Diameter:	1730 mm (68'')	1778 mm (70") (2 Blades) - 1730 mm (68") (3 Blades)	1750 mm (69")
Type	Fixed pitch – wood/composite	Composite Ground Adjustable Pitch	Composite Variable Pitch

1.4.3 Oil System

Oil system	Forced, with external oil reservoir
Oil	See Rotax operator's manual
Oil Capacity	Max. 3.0 liters (3.2 qt) – min. 2.0 liters (2.1 qt)

1.4.4 Cooling

Cooling system:	Combination air and liquid cooled system
Coolant:	See Rotax operator's manual
Capacity	3.0 liters (3.17 quarts)

The MT Propeller MTV-33-1 can also be installed on P2008 A/C. It is a hydraulic constant speed propeller, of composite fiber construction with stainless steel leading edge for all weather operation.
More information on the manufacturer and the propeller can be found at http://www.mt-propeller.com.

1.1.8 Fuel system

The system is equipped with two aluminum fuel tanks integrated in the wing box and accessible for inspection through two dedicated covers. Capacity of individual tank is 52lt (13.7 gal) and total usable fuel is 104lt (27.4 gal). Each fuel tank is equipped with a cabin installed shutoff and selector Andair valve. A strainer cup with a drainage valve (Gascolator) is located on the engine side of the firewall. Fuel level indicators for each tank are located on instrument panel. Fuel feed is through two electrical pumps. All fuel lines located in the engine compartment are protected with fireproof braiding to avoid possible fire. Figure 1-3 illustrates the schematic of the fuel system. All lines in the fuselage are made in steel hoses to prevent leaks and damages. Fittings are AN type.

WARNING

Fuel quantity should be checked on a level surface or a false reading may result. Always visually verify fuel quantity by looking inside the tanks during filling.

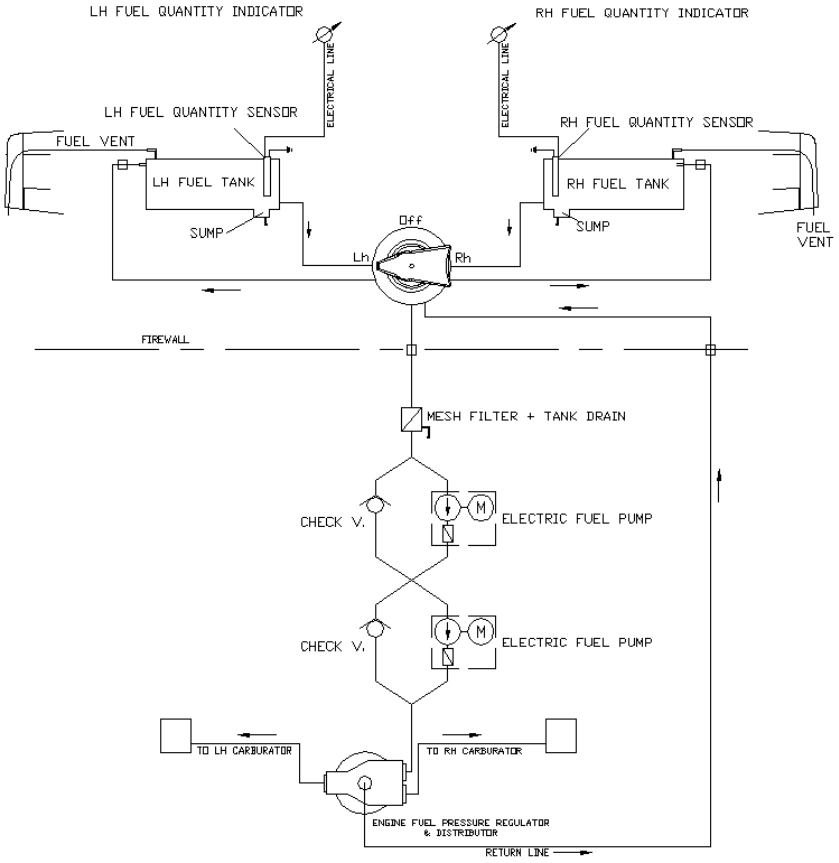


Figure 1-3 Fuel System

Supplement S2: pages replacement instructions

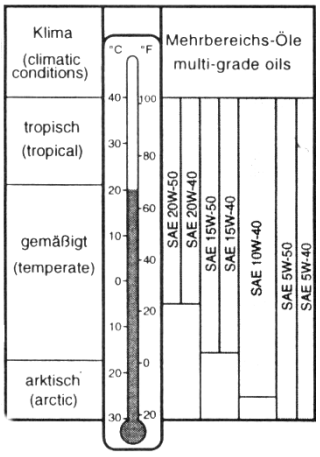
Section 2 – Operating Limitations

Apply following pages replacement procedure:

Supplement S2 – LIMITATIONS pages		**Basic AFM Section 2 pages**
MT31	**REPLACES**	31

3.4.2 Lubricant

Viscosity
Use viscosity grade oil as specified in the following table:



Warning
Admissible pressure for cold start is 7 bar maximum for short periods

Warning
Use of Aviation Grade Oil with or without additives is not permitted

3.4.3 Coolant

Coolant type and specifications are detailed into the "Rotax Operator's Manual" and in its related documents.

3.4.4 Propellers

Manufacturer:	GT Tonini	Sensenich	MT Propeller
Model:	GT-2/173/VRR-FW101	2A0R5R70EN (2 Blades) - 3B0R5R68C (3 Blades)	MTV-33-1-A/175-200
Number of blades:	2	2/3 Blades	2
Diameter:	1730 mm (68'') **NO REDUCTIONS ARE PERMITTED**	1778 mm (70") (2 Blades) - 1730 mm (68") (3 Blades) **NO REDUCTIONS ARE PERMITTED**	1750 mm (69")
Type	Fixed pitch – wood/composite	Composite Ground Adjustable Pitch	Composite Variable Pitch

3.4.5 Fuel

Two tanks:	52 liters (13.7 gallons)
Total fuel capacity:	104 liters (27.5 gallons)

NOTE
During all phases of flight, one tank normally supplies engine fuel feed

Supplement S2: pages replacement instructions

Section 3 – Weight & Balance

Refer to Basic AFM Section 3.

Supplement S2: pages replacement instructions

Section 4 –Performance

Apply following pages replacement procedure:

Supplement S1 – Performance pages		**Basic AFM Section 4 pages**
A45 thru A47	**REPLACE**	45 thru 47
A51 thru A53	**REPLACE**	51 thru 53

4.6 Takeoff Performance

Weight = *600 kg*

Flaps: Take-Off (15°)
Speed at Lift-Off = *48 KIAS*
Speed Over *50ft* Obstacle = *58 KIAS*
Throttle Levers: *Full Forward*
Runway: *Grass*

Corrections
Headwind: - 5m for each kt (16 *ft/kt*)
Tailwind: + 15m for each kt (50*ft/kt*)
Paved Runway: - *6%* to Ground Roll
Runway slope: + 5% to Ground Roll for each +1%

Pressure Altitude [ft]		Distance [m]				
		Temperature [°C]				ISA
		-25	0	25	50	
S.L.	Ground Roll	128	140	148	152	**140**
	At 50 ft AGL	225	245	260	264	**245**
1000	Ground Roll	139	151	161	163	**157**
	At 50 ft AGL	244	266	280	284	**274**
2000	Ground Roll	148	161	169	170	**166**
	At 50 ft AGL	261	283	297	298	**291**
3000	Ground Roll	159	171	178	177	**175**
	At 50 ft AGL	278	301	314	312	**309**
4000	Ground Roll	168	181	187	184	**185**
	At 50 ft AGL	296	318	328	323	**326**
5000	Ground Roll	179	190	195	190	**195**
	At 50 ft AGL	315	337	344	334	**344**
6000	Ground Roll	190	202	205	197	**205**
	At 50 ft AGL	336	356	361	344	**363**
7000	Ground Roll	202	214	214	203	**218**
	At 50 ft AGL	357	377	378	354	**385**
8000	Ground Roll	215	225	223	208	**229**
	At 50 ft AGL	380	399	395	364	**408**
9000	Ground Roll	228	236	233	212	**242**
	At 50 ft AGL	404	420	410	369	**429**
10000	Ground Roll	242	249	240	213	**255**
	At 50 ft AGL	429	441	425	372	**454**

Weight = 550 *kg*

Flaps: Take-Off (15°)
Speed at Lift-Off = *48 KIAS*
Speed Over *50ft* Obstacle = *58 KIAS*
Throttle Levers: *Full Forward*
Runway: *Grass*

Corrections
Headwind: - 5m for each kt (16 *ft/kt*)
Tailwind: + 15m for each kt (50 *ft/kt*)
Paved Runway: - *6%* to Ground Roll
Runway slope: + 5% to Ground Roll for each +1%

Pressure Altitude [ft]		Distance [m]				
		Temperature [°C]				ISA
		-25	0	25	50	
S.L.	Ground Roll	103	113	121	126	**115**
	At 50 ft AGL	180	198	211	219	**200**
1000	Ground Roll	111	123	130	135	**127**
	At 50 ft AGL	195	215	228	235	**223**
2000	Ground Roll	120	131	139	142	**135**
	At 50 ft AGL	208	228	242	247	**236**
3000	Ground Roll	127	139	146	149	**143**
	At 50 ft AGL	223	242	255	259	**251**
4000	Ground Roll	136	147	153	154	**150**
	At 50 ft AGL	236	258	269	269	**264**
5000	Ground Roll	144	155	162	160	**159**
	At 50 ft AGL	252	272	282	280	**278**
6000	Ground Roll	153	164	169	167	**167**
	At 50 ft AGL	268	288	297	290	**294**
7000	Ground Roll	163	174	178	172	**177**
	At 50 ft AGL	285	306	312	300	**312**
8000	Ground Roll	172	184	187	178	**187**
	At 50 ft AGL	305	324	327	311	**331**
9000	Ground Roll	184	193	194	182	**197**
	At 50 ft AGL	326	341	340	318	**349**
10000	Ground Roll	195	204	202	187	**208**
	At 50 ft AGL	345	360	355	323	**368**

Weight = *500 kg*

Flaps: Take-Off (15°)
Speed at Lift-Off = *48 KIAS*
Speed Over *50ft* Obstacle = *58 KIAS*
Throttle Levers: *Full Forward*
Runway: *Grass*

Corrections

Headwind: - 5m for each kt (16 *ft/kt*)
Tailwind: + 15m for each kt (50*ft/kt*)
Paved Runway: - *6%* to Ground Roll
Runway slope: + 5% to Ground Roll for each +1%

Pressure Altitude [ft]		Distance [m]				
		Temperature [°C]				ISA
		-25	0	25	50	
S.L.	Ground Roll	81	89	95	98	**90**
	At 50 ft AGL	141	154	166	170	**156**
1000	Ground Roll	87	96	103	105	**100**
	At 50 ft AGL	152	168	178	183	**173**
2000	Ground Roll	94	101	108	110	**106**
	At 50 ft AGL	163	178	189	193	**184**
3000	Ground Roll	99	108	114	116	**111**
	At 50 ft AGL	174	189	199	202	**195**
4000	Ground Roll	106	114	120	121	**117**
	At 50 ft AGL	184	201	210	210	**205**
5000	Ground Roll	112	121	125	126	**124**
	At 50 ft AGL	197	213	220	218	**217**
6000	Ground Roll	119	128	132	130	**130**
	At 50 ft AGL	210	225	231	227	**229**
7000	Ground Roll	127	135	138	135	**138**
	At 50 ft AGL	223	239	243	235	**244**
8000	Ground Roll	136	143	145	139	**146**
	At 50 ft AGL	238	253	255	242	**258**
9000	Ground Roll	144	151	152	143	**154**
	At 50 ft AGL	254	267	267	248	**272**
10000	Ground Roll	153	160	157	145	**162**
	At 50 ft AGL	270	281	277	253	**287**

4.8 Climb Performance

CLIMB RATE IN CLEAN CONFIGURATION

CONDITIONS:

- Flap: 0°
- Engine: MCP
- V_Y = 78 KIAS [77KCAS]

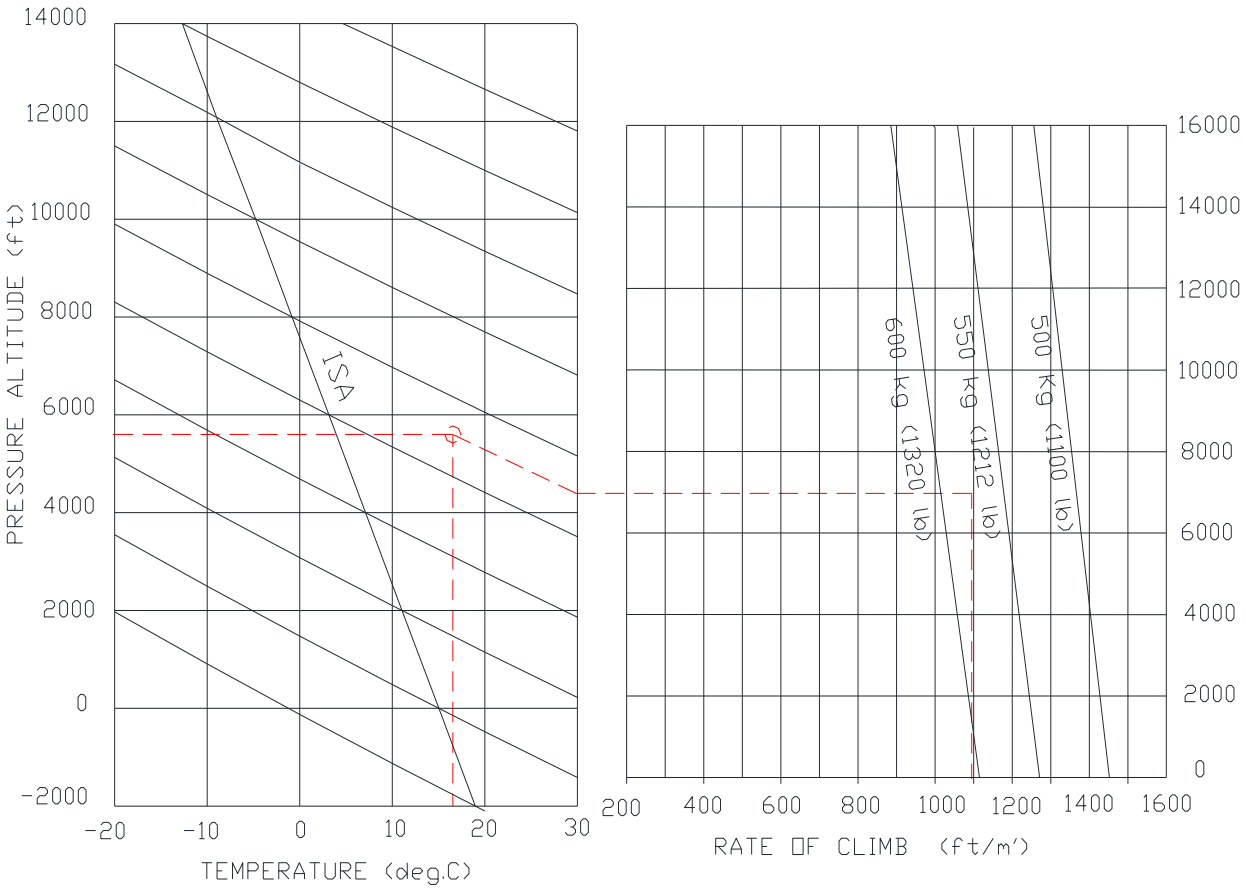


Fig. 4-5 CLIMB

⇒ *Example:*

Given
O.A.T. = 17°*C*
Pressure altitude = 5600 *ft*
Weight = 550 *Kg (1212 lb)*

Find
Rate of climb = *1095 ft/min*

4.9 Cruise

Maximum takeoff weight = 600 kg (1320 lbs)
Fuel tanks 2x52 liters (13.7 gal) (less the unusable fuel = 1.1gal)

ALL ENDURANCE DATA (HOURS AND n.m.) ARE GIVEN WITH A RESERVE OF 30' (FOR EXAMPLE: THE FIRST ROW INDICATES A RANGE OF 7.1hrs + 0.5hr RESERVE)

Pressure altitude H_P: **0** *ft* *OAT: +15°C*

Power setting	Engine Speed RPM	Speed KTAS	Consumption (gal/h)	Endurance (hrs) (including 30' reserve)	Range (N.m.)
55%	4300	100	3.3	7.1	663
65%	4800	112	4.6	5.0	505
75%	5000	118	5.3	4.3	461
100%	5500	129	6.9	3.2	380
115%	5800	134	8.6	2.4	308

Pressure altitude H_P: **2000***ft* *OAT: +11°C*

Power setting	Engine Speed RPM	Speed KTAS	Consumption (gal/h)	Endurance (hrs) (including 30' reserve)	Range (N.m.)
54%	4300	101	3.2	7.5	695
64%	4800	112	4.4	5.2	527
74%	5000	119	5.3	4.3	466
99%	5500	130	6.8	3.2	391
114%	5800	135	8.5	2.5	320

Pressure altitude H_P: **4000***ft* *OAT: +7°C*

Power setting	Engine Speed RPM	Speed KTAS	Consumption (gal/h)	Endurance (hrs) (including 30' reserve)	Range (N.m.)
52%	4300	102	2.8	8.4	782
62%	4800	113	4.2	5.5	561
72%	5000	119	5.1	4.4	480
97%	5500	130	6.7	3.3	404
112%	5800	135	8.2	2.6	336

Pressure altitude H_P: **6000***ft* *OAT: +3°C*

Power setting	Engine Speed RPM	Speed KTAS	Consumption (gal/h)	Endurance (hrs) (including 30' reserve)	Range (N.m.)
51%	4300	102	2.7	9.0	837
61%	4800	113	4.1	5.6	578
71%	5000	120	5.1	4.5	492
96%	5500	131	6.6	3.3	412
111%	5800	136	8.0	2.6	346

Pressure altitude H_P: **8000***ft OAT: -1°C*

Power setting	Propeller RPM	Speed KTAS	Consumption (gal/h)	Endurance (hrs) (including 30' reserve)	Range (N.m.)
50%	1770	103	2.5	9.7	999
60%	1976	113	4.0	5.8	655
70%	2058	121	5.0	4.6	557
95%	2264	131	6.5	3.4	445
110%	2388	137	7.9	2.7	370

Pressure altitude H_P: **10000***ft OAT: -5°C*

Power setting	Propeller RPM	Speed KTAS	Consumption (gal/h)	Endurance (hrs) (including 30' reserve)	Range (N.m.)
48%	1770	103	2.1	11.6	1195
58%	1976	114	3.7	6.2	707
68%	2058	122	4.8	4.7	573
93%	2264	132	6.4	3.4	449
108%	2388	137	7.7	2.8	384

Pressure altitude H_P: **12000***ft OAT: -9°C*

Power setting	Propeller RPM	Speed KTAS	Consumption (gal/h)	Endurance (hrs) (including 30' reserve)	Range (N.m.)
47%	1770	104	1.9	13.0	1352
57%	1976	115	3.6	6.5	747
67%	2058	123	4.7	4.8	590
92%	2264	132	6.3	3.5	462
107%	2388	138	7.5	2.8	386

Supplement S2: pages replacement instructions

Section 5 – Emergency Procedures

Refer to Basic AFM Section 5.

Supplement S2: pages replacement instructions

Section 6 – Normal Procedures

Refer to Basic AFM Section 6.

Supplement S2: pages replacement instructions

Section 7 – Ground Handling & Service

Refer to Basic AFM Section 7.

Supplement S2: pages replacement instructions

Section 8 – Placards & Markings

Refer to Basic AFM Section 8.

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