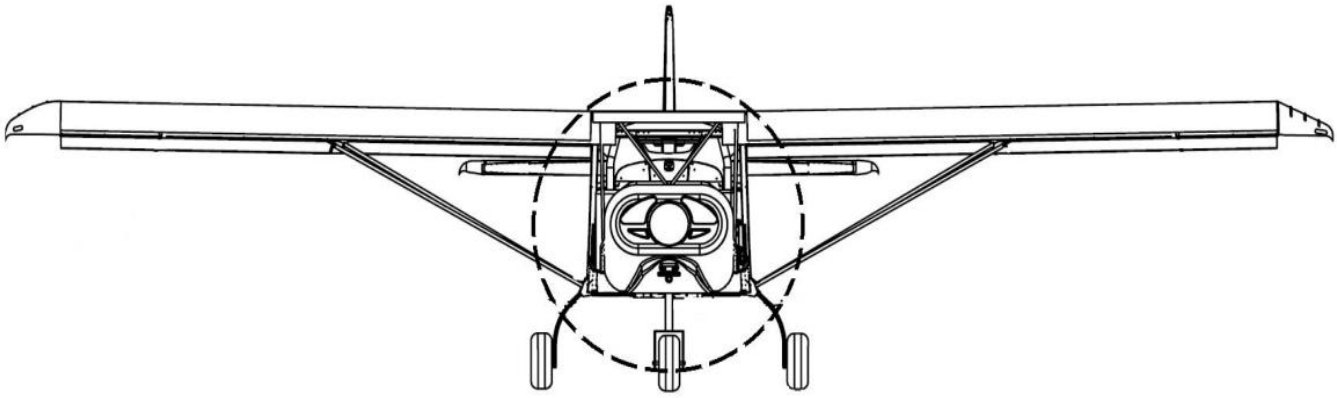
World Aircraft Company
South America

PILOT'S OPERATING HANDBOOK



THIS DOCUMENT MUST BE CARRIED IN THE AIRCRAFT AT ALL TIMES.

Model MXP 1000 TAYRONA

Serial No._____

Registration No. _____

World Aircraft Company South America
Jamundí – Valle del Cauca – Colombia
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NOTICE

Assurance that the aircraft is in an airworthy condition is the responsibility of the owner. The pilot in command is responsible for determining that the aircraft is safe for flight. The pilot is also responsible for remaining within the operating limitations outlined by the Pilot's Operating Handbook (POH), instrument markings, and placards.

This POH is not designed as a substitute for adequate and competent flight instruction, knowledge of the current airworthiness directives, applicable air regulations, or advisory circulars.

RECORD OF REVISIONS

Any revision to the present POH, except actual weighing data, is recorded: a Record of Revisions is provided in this Section and the operator is advised to make sure that the record is kept up-to-date.

The POH issue is identified by a *Doc.-No.* and *Revision* codes reported on the header of each page.

Additions, deletions and revisions to existing text will be identified by a revision bar (black line) in the right hand margin of the page, adjacent to the change.

Rev. No.	*Revised Pages*	*Description of Revision*	*Approval*	*Date*	*Civil Aviation Authority Approval*
0	*All Document*	*First Issue*		*08/07/2019*	

LIST OF EFFECTIVE PAGES

SECTION	PAGES	DATE	REVISION
SECTION 0	*0-1 thru 0-4*	*08/07/2019*	*0*
SECTION 1	*1-1 thru 1-8*	*08/07/2019*	*0*
SECTION 2	*2-1 thru 2-17*	*08/07/2019*	*0*
SECTION 3	*3-1 thru 3-15*	*08/07/2019*	*0*
SECTION 4	*4-1 thru 4-12*	*08/07/2019*	*0*
SECTION 5	*5-1 thru 5-11*	*08/07/2019*	*0*
SECTION 6	*6-1 thru 6-10*	*08/07/2019*	*0*
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SECTION 8	*8-1 thru 8-6*	*08/07/2019*	*0*

TABLE OF CONTENT

SECTION 1 – GENERAL

1.1 INTRODUCTION

This Pilot's Operating Handbook (POH) has been prepared and is intended to provide pilots with information for safe and efficient operation of this aircraft, which belongs to the Light Sport Airplane (LSA) category. This manual contains informative material, which is to be supplied to the pilot according to the requirements of ASTM F2746, a related accepted consensus standard by FAA. Some supplementary information is also introduced into the content by the aircraft manufacturer.

NOTE

It is the pilot's responsibility to acquaint him/herself with the contents of this POH, as well as with any revisions to it.

1.2 BASIS OF CERTIFICATION

The MXP 1000 Tayrona has been conceived according to the strictest and current EASA's CS-VLA standard, a European rule homologous to ASTM's consensus standards accepted by the American Federal Aviation Administration (FAA).

This rule, in conjunction with ASTM F2245 and ASTM F2972, sets forth the parameters for the supply of raw materials, strength factors, design specifications and aircraft performance.

1.3 WARNINGS, CAUTIONS AND NOTES

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

WARNING: Means that the non-observation of the corresponding procedure leads to an immediate or important degradation of the flight safety, personal injury or loss of life.

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, damage to or destruction of equipment, loss of effectiveness or long term health hazards to personnel.

NOTE: Draws the attention to any special item not directly related to safety but which is important or unusual and is essential to be emphasize.

1.4 DESCRIPTIVE DATA

The MXP 1000 Tayrona is a light-weight, single-engine, two persons, side-by-side aircraft, aimed for sport and leisure flight as well as for training. It is designed and manufactured by WORLD AIRCRAFT COMPANY SOUTH AMERICA (WACSA S.A.S) headquartered in Jamundí- Colombia, South America.

1.4.1 Airframe

AIRFRAME	
Manufacturer	*World Aircraft Company South America*
Country of Origin	*Colombia*
Span	*10 m / 32,8 ft*
Length	*6,4 m / 20,9 ft*
Height	*2,5 m / 8,2 ft*
Wing Surface	*12,61 m^2 / 129.3 ft^2*
Mean Aerodynamic Chord	*1,261 m / 4,137 ft*
Wing Loading	*47,6 kg/m^2 / 9,75 lb/ft^2*
Wing Profile	*Modified NACA 5417*

1.4.2 Engine

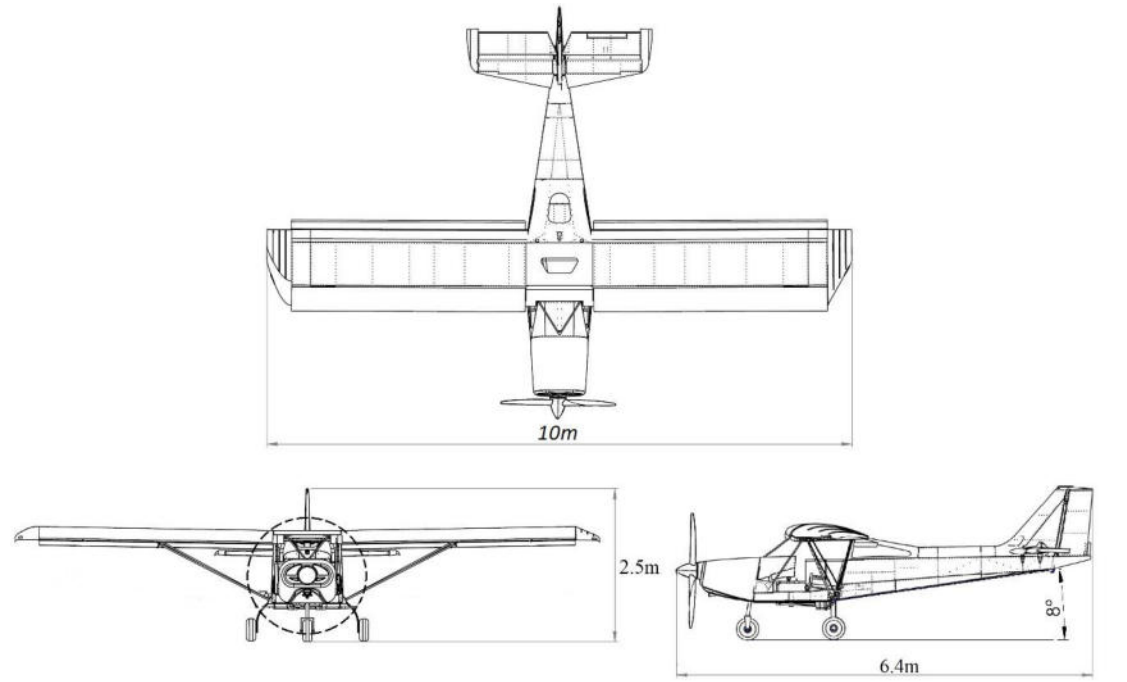
ENGINE		
Manufacturer	*BRP-Powertrain GmbH & Co. KG*	
Country of Origin	*Austria*	
Model	*ROTAX 912 ULS*	
Type of Fuel	*MOGAS –Minimum Octane Rating ((R+M)/2 Method) = 91*	
Fuel Consumption	*- At 75% Continuous performance*	*= 4.9 gal/h*
	- At Max Continuous performance	*= 6.6 gal/h*
	-At Take-Off Performance	*= 7.1 gal/h*
Gear Ratio (Crankshaft: Propeller Shaft)	*2.43:1*	
Speed Limits	*-Take-Off Speed*	*= 5800 rpm (max. 5 min)*
	-Max. Continuous Speed	*= 5500 rpm*
	- Idle Speed	*= min. 1400 rpm*

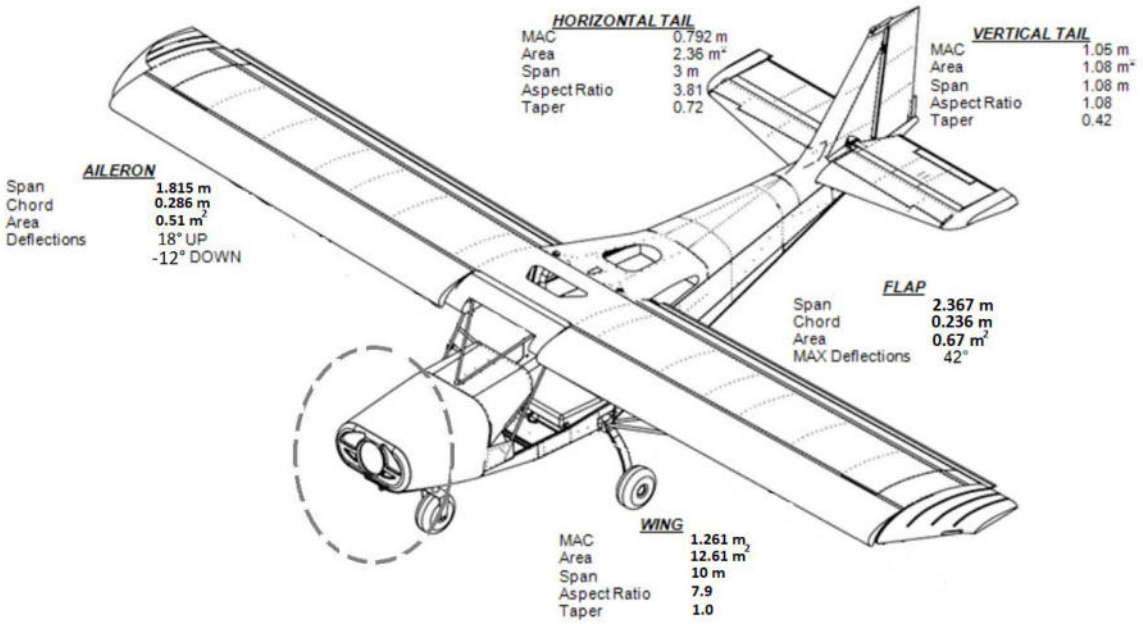
1.4.3 Propeller

The aircraft is known to fly safely and boost the best of its performance with the following propellers:

Manufacturer	*Ivoprop Corp.*	*Powerfin Propellers*	*DUC Hélices*	*Sensenich Propellers*
Country of Origin	*United States*	*United States*	*France*	*United States*
Model	*Medium*	*F-Blade Model*	*Inconel FLASH*	*2A0 Series*
Type	*Composite – Electric In-Flight Adjustable*	*Composite – Ground Adjustable*	*Composite – Ground Adjustable*	*Composite – Ground Adjustable*
Number of Blades	*3*	*3*	*3*	*2*
Diameter	*Min. 1727mm (68") – Max.1828mm (72")*			

1.5 THREE-VIEW DRAWING





1.6 LIST OF DEFINITIONS AND ABBREVIATIONS

The following words or expressions have been used or may be helpful in particular Sections of this POH:

ISA	***International Standard Atmosphere.*** Is the air atmospheric standard condition at sea level, at 15°C and at 1013 hPa.
OAT	***Outside Air Temperature.*** Is the air static temperature expressed in Celsius [°C].
IAS	***Indicated Airspeed***. Is the speed shown on the airspeed indicator and is expressed in MPH.
CAS	***Calibrated Airspeed***. Is the indicated airspeed expressed in MPH, corrected taking into account the errors related to the instrument itself.
TAS	***True Airspeed.*** Is the CAS airspeed corrected taking into account altitude and temperature.
V_{S0}	Stall Speed in landing configuration (full flaps extended, 42°).
V_{S1}	Stall Speed in a given flap configuration.
V_x	***Best Angle of Climb Speed.*** Is the airspeed, at which the maximum increase of altitude over the shortest distance may be achieved.
V_y	***Best Rate of Climb Speed.*** Is the airspeed at which the maximum increase of altitude in the shortest time may be achieved.
V_A	***Design Maneuvering speed***. Is the airspeed above which it is not allowed to make full or abrupt control movement.
V_{FE}	***Maximum Flap Extended speed.*** Is the highest airspeed permissible with flap extended.
V_{NO}	***Maximum Structural Cruising Speed.*** Is the airspeed that should not be exceeded, except in smooth air and only with caution.
V_{NE}	***Never Exceed Speed.*** Is the airspeed limit that may not be exceeded at any time.
V_O	***Operating Maneuvering Speed***. Is the airspeed above which it is not allowed to make full or abrupt control movement.

V_R	***Rotation Speed.*** Is the speed at which the aircraft rotates about the pitch axis during takeoff.
Usable Fuel	Fuel available for flight planning.
Unusable fuel	Quantity of fuel that cannot be safely used in flight.
Datum	An imaginary vertical plane from which all horizontal distances are measured for balance purposes.
Arm	Horizontal distance of an item measured from the reference datum.
Moment	Product of the weight of an item multiplied by its arm.
C.G.	***Center of Gravity***. Is the point at which the aircraft, 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 aircraft.
Standard Empty Weight	Weight of the aircraft with engine fluids and oil at operating levels.
Basic Empty Weight	Standard empty weight to which it is added the optional equipment weight.
Useful load	Difference between maximum takeoff weight and the basic empty weight.
Maximum Takeoff Weight	Maximum weight approved to perform the takeoff.
Maximum Landing Weight	Maximum weight approved to perform the landing

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1.7 UNIT CONVERSION CHART

TO CONVERT FROM		TO		MULTIPLY BY
Temperature				
Fahrenheit	[°F]	Celsius	[°C]	$\left(\frac{5}{9}\right) * (°F - 32)$
Celsius	[°C]	Fahrenheit	[°F]	$\left(\frac{9}{5} * °\mathrm{C}\right) + 32$
Forces				
Kilograms	[Kg]	Pounds	[lbs]	2,205
Pounds	[lbs]	Kilograms	[Kg]	0,4536
Speed				
Kilometers /hour	[km/h]	Knots	[kts]	0,5396
Knots	[kts]	Kilometers/hour	[km/h]	1,853
Mile / Hour (Mph)	[mile/h]	Kilometers/hour	[km/h]	1,6093
Feet per minute	[ft/min]	Meters per second	[m/s]	0,00508
Meters per second	[m/s]	Feet per minute	[ft/min]	196,86
Length				
Kilometers	[km]	Nautical miles	[nm]	0,5396
Nautical miles	[nm]	Kilometers	[km]	1,853
Meters	[m]	Feet	[ft]	3,281
Feet	[ft]	Meters	[m]	0,3048
Centimeters	[cm]	Inches	[in]	0,3937
Inches	[in]	Centimeters	[cm]	2,54
Volume				
Litres	[l]	U.S. Gallons	[US Gal]	0,2642
U.S. Gallons	[US gal]	Litres	[l]	3,785

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SECTION 2 – LIMITATIONS

2.1 INTRODUCTION

This Section contains the limitations on the operation of this aircraft, the marking of the instruments and the basic informative placards required for safe operation of the aircraft, engine, the standard systems and the standard equipment.

2.2 AIRSPEED LIMITATIONS

AIRSPEED		IAS [mph]	CAS [mph]	REMARKS
V_{NE}	Never exceed speed	138	144	Do not exceed this speed in any operation.
V_{NO}	Maximum Structural Cruising speed	122	126	Do not exceed this speed except in smooth air, and only with caution.
V_A	Design Maneuvering speed	95	97	Do not make full or abrupt control movement above this speed, because under certain conditions the aircraft may be overstressed by full control movement.
V_O	Operating Maneuvering speed			
V_{FE}	Maximum flaps extended speed	70	71	Do not exceed this speed for indicated flap setting.

2.3 AIRSPEED INDICATOR MARKINGS

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

MARKING	*IAS [mph]*	*EXPLANATION*
White arc	41 - 70	Positive Flap Operating Range (lower limit is V_{SO}, at specified maximum weight and upper limit is the maximum speed permissible with landing flap extension).
Green arc	47 - 122	Normal Operating Range (lower limit is V_{S1} at specified maximum weight and most forward c.g. with flaps retracted, and upper limit is maximum structural speed V_{NO}).
Yellow arc	122 - 138	Maneuvers must be conducted with caution and only in smooth air.
Red line	138	Maximum speed for all operations.

2.4 POWERPLANT

Engine Manufacturer	*BRP-Powertrain GmbH & Co. KG*	
Model	*ROTAX 912 ULS*	
Power	*Take-Off*	= *73.5 kW / 98.5 hp*
	Max. Continuous	= *69 kW / 92.5 hp*
Speed	*Take-Off*	= *5800 rpm (max 5 min)*
	Max. Continuous	= *5500*
	75%	= *5000*
	65%	= *4800*
	55%	= *4300*
	Iddle	= *1400 rpm (min)*
Acceleration	*Operation at zero gravity and in negative "g" condition*	= *Max 5 sec at max -0.5 g*
Oil Pressure	*Max.*	= *7 bar (102 psi)*
	Min.	= *0.8 bar (12 psi) (Below 3500 rpm)*
	Normal	= *2.0 to 5.0 bar (29 – 73 psi) (Above 3500 rpm)*
	CAUTION	102 psi for a short period admissible al cold start.
Fuel Pressure	*Max.*	= *0.4 bar (5.8 psi)*
	Min.	= *0.15 bar (2.2 psi)*
Oil Temperature	*Max.*	= 130°C (266°F)
	Min.	= 50°C (120°F)
	Normal.	= 90 to 110 °C (190 to 230°F)
Water/Coolant Temperature	*Max.*	= 120°C (248°F)
Exhaust Gas Temperature	*Max.*	= 880°C (1616 °F)
Engine Start, Operating Temperature	*Max.*	= 50 °C (120 °F)
	Min.	= -25 °C (-13 °F) (Oil Temperature)

2.4.1 Fuel

3 FUEL TANKS	1 Left Wing Tank (12 US Gallons) 1 Right Wing Tank (12 US Gallons) 1 Reservoir Tank (3 US Gallons) located on the fuselage	
MAXIMUM CAPACITY	27 US Gallons (102 litres)	
MAXIMUM USABLE FUEL	23,7 US Gallons (89,7 litres)	
APPROVED FUEL	• MOGAS ASTM D4814 (min RON 95/AKI 91) • MOGAS EN 228 Super/Super plus (min RON 95/AKI 91) • AVGAS 100 LL (ASTM D910)	
	CAUTION	Prolonged use of aviation fuel AVGAS 100LL places greater stress on the valve seats due to its high lead content and forms increased deposits in the combustion chamber and lead sediments in the oil system. Thus is should only be used in case of problems with vapor lock or when other types of gasoline are unavailable.
	CAUTION	Obey the latest edition of Service Instruction SI-912-016 for the selection of the correct fuel. In addition to AVGAS and unleaded automotive fuel (MOGAS) the Rotax 912/914 series of engines are approved for use E10 (Unleaded gasoline blended with 10% ethanol). Fuels that contain more than 10% ethanol blend have not been tested by BRP-Powertrain and are not permitted for use.

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2.4.2 Lubricant

As recommended by Authorized ROTAX Distributors:

BRAND	*DESCRIPTION*	*SPECIFICATION*	*VISCOSITY*	*CODE*
SHELL	Aero Shell Oil Sport Plus 4	RON 424*	SAE 10W-40	---
EVVA	EVVA C52 Airmax	API SJ/CF	SAE 10 W-40	3
EVVA	Multigrade Oil C52	API SJ/CF	SAE 15 W-50	3
MOBIL	Mobil 1	API SJ/CF	SAE 5 W-30	5
MOBIL	Mobil 1	API SJ/CF	SAE 15 W-50	5
MOBIL	Mobil 1 Racing 4T / MX 4T	API SJ/CF	SAE 10 W-40	1
MOBIL	Mobil 1 V-Twin	API SJ/CF	SAE 20 W-50	1
MOBIL	Mobil 1 Clean 7500	API SM/SL	SAE 10 W-30	4
SHELL	Advance VSX 4	API SG	SAE 10 W-40	3
SHELL	Advance VSX 4	API SG	SAE 15 W-50	3
SHELL	Advance Ultra 4	API SJ	SAE 10 W-40	1
SHELL	Formula Shell Synthetic Blend	API SL	SAE 10 W-30	4
SKYDRIVE	Skydrive Aerolube 10W40 oil	API SL	SAE 10 W-40	2
YACCO	Aero AVX 500 4T	API SL	SAE 10 W-40	2

NOTE

* Specification RON 424 is a ROTAX® Internal Standard, which is only available on special request via the ROTAX® Authorized Distributor and will not be disclose to third parties without consent.

NOTE

See ROTAX® SI-912-016 R4 or latest revision for list of alternative recommended commercial brands and types.

2.4.3 Coolant

In principle, 2 different types of coolant are permitted.

- Conventional coolant based on ethylene glycol.
- Waterless coolant based on propylene glycol.

CAUTION

Obey the manufacturer´s instructions about the coolant.

Applicable for Engine S/N without Suffix -01:

	Mixture ratio %	
Designation	***Concentrate***	***Water***
Conventional e.g. BASF Glysantine anticorrosion	50*	50
Waterless e.g. EVANS NPG+	100	0

* Coolant component can be increased up to max 65%.

Applicable for Engine S/N without Suffix -01:

	Mixture ratio %	
Designation	***Concentrate***	***Water***
Conventional e.g. BASF Glysantine anticorrosion	50*	50

* Coolant component can be increased up to max 65%.

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2.4.4 Marking of the Engine Monitoring Instruments

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	[rpm]	---	1400 - 5500	5500 - 5800	5800
Oil temp.	[°F]	120	120 - 230	230 – 266	266
EGT	[°C]	700	700 - 850	850 - 880	880
Oil Pressure	[psi]	12	29 - 73	12–29/ 73-102	102
Fuel press.	[psi]	2,2	2,5 – 5,5	2,2–2,5 / 5,5-5,8	5,8
Water temp Conventional Mixure ratio % 50 - 50	[°C] [°F]	50 °C 122°F	50 – 90 °C 122 - 194 °F	90 -100 °C 194 – 212 °F	100°C 212°F
Water Temp. Waterless e.g. EVANS ratio % 100 - 0	[°C] [°F]	50°C 122°F	50 – 120 °C 122 – 248 °F	120 - 130 °C 248 - 266 °F	130°C 266 °F

2.5 PROPELLER

NOTE

Consult the manufacturer manual for maximum revolutions per minute (RPM) allowed depending upon the particular propeller installed.

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2.6 MAXIMUM OPERATING ALTITUDE

Maximum Take-off and landing altitude is 9000 ft (2743 m) MSL.

Maximum operating altitude is H_D 14000 ft (4267 m) MSL.

CAUTION

At altitudes above 10000 ft (3048 m) up to an including 14000 ft (4267 m), flight crew is recommended to use supplemental oxygen.

2.7 AMBIENT TEMPERATURE

Ambient temperature from -25°C to +50°C.

WARNING

Flight in expected and / or known icing conditions is forbidden.

2.8 WEIGHT AND CENTER OF GRAVITY LIMITS

Maximum Take-Off Weight = 600 kg (1320 lb)

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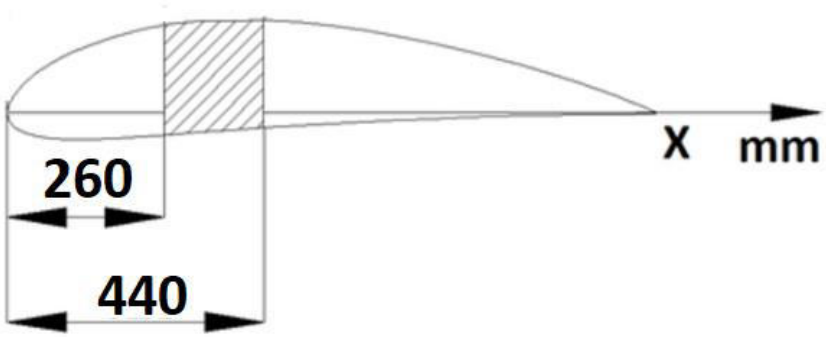
2.8.1 C.G. Range

NOTE

DATUM is the leading edge of the wing.



FORWARD LIMIT = 260 mm
AFT LIMIT = 440 mm

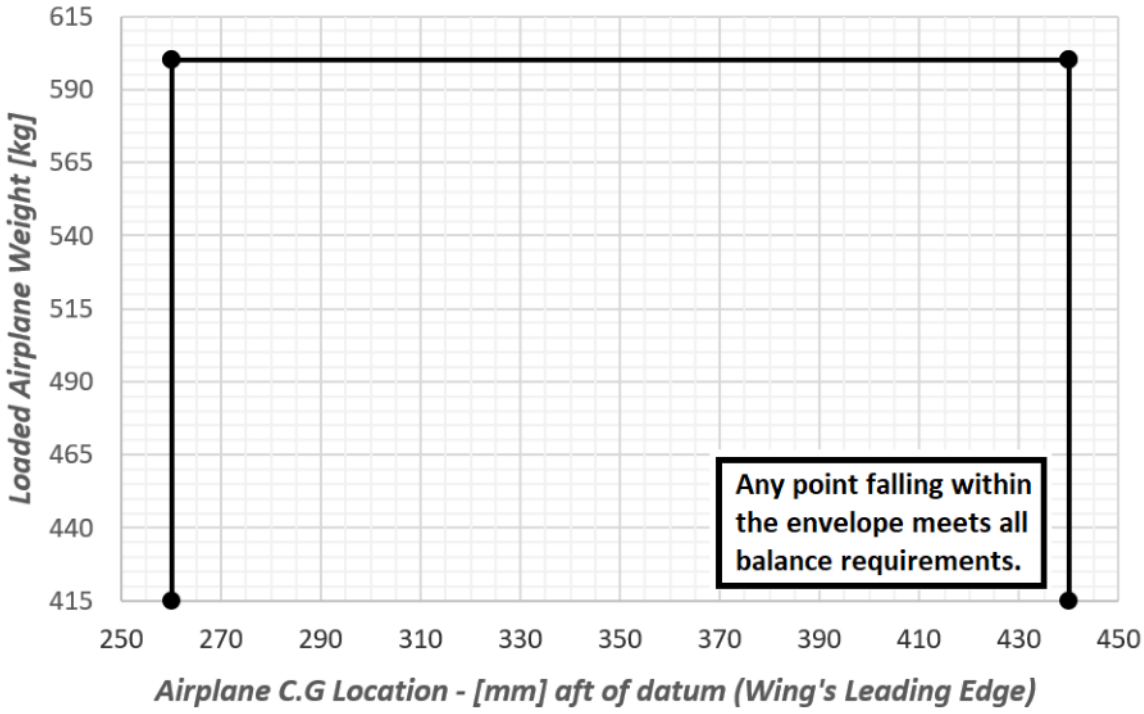
NOTE

For Levelling procedure, refer to Section 6 of this Manual.

WARNING

It is the responsibility of the aircraft owner and the pilot to insure that the aircraft is properly loaded. See Section 6 of this Manual for loading information.

2.8.2 C.G Envelope



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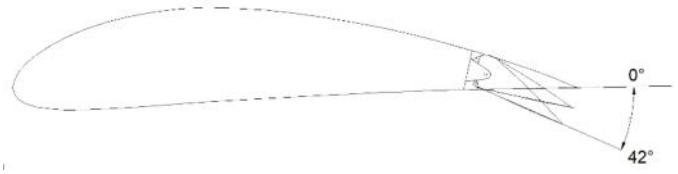
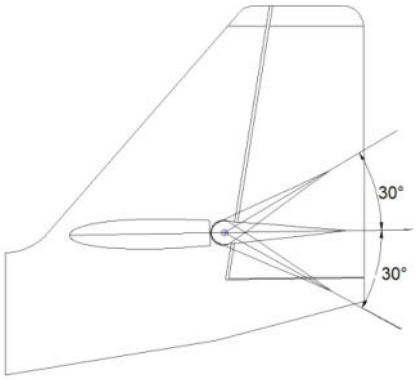
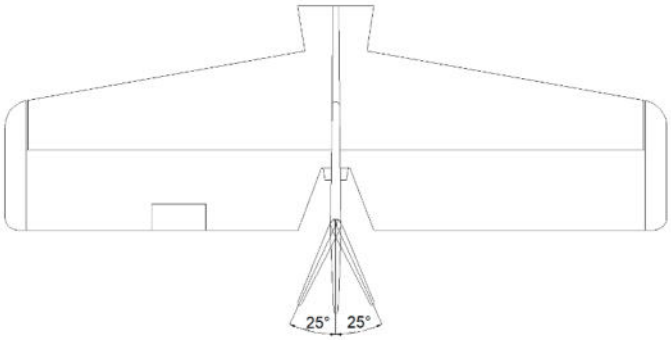
2.9 FLIGHT CONTROLS TRAVEL

FLAPS	
AILERONS	
ELEVATOR	
RUDDER	

2.10 APPROVED MANOEUVRES

This aircraft has been designed and ground and flight tested in accordance with CS-VLA rules, the European rule homologous to the FAA's accepted consensus standard ASTM F2245 established for light sport airplanes. The MXP 1000 Tayrona is not designed for aerobatic operations. Only this operations incidental to normal flight are approved. These operations include normal stalls, chandelles, lazy eights, and turns in which the angle of bank is limited to 60°.

WARNING

Intentional Spins and Acrobatic Maneuvers are no permitted.

Acrobatic Maneuvers that may impose high load factors should not be attempted under any circumstance. Proper speed control is an essential requirement for execution of any maneuver and care should always be exercised to avoid excessive speeds which in turn can impose excessive load factors during turns. Avoid abrupt use of controls in the execution of any type of abnormal maneuvers.

2.11 DEMONSTRATED CROSS WIND SAFE OPERATIONS

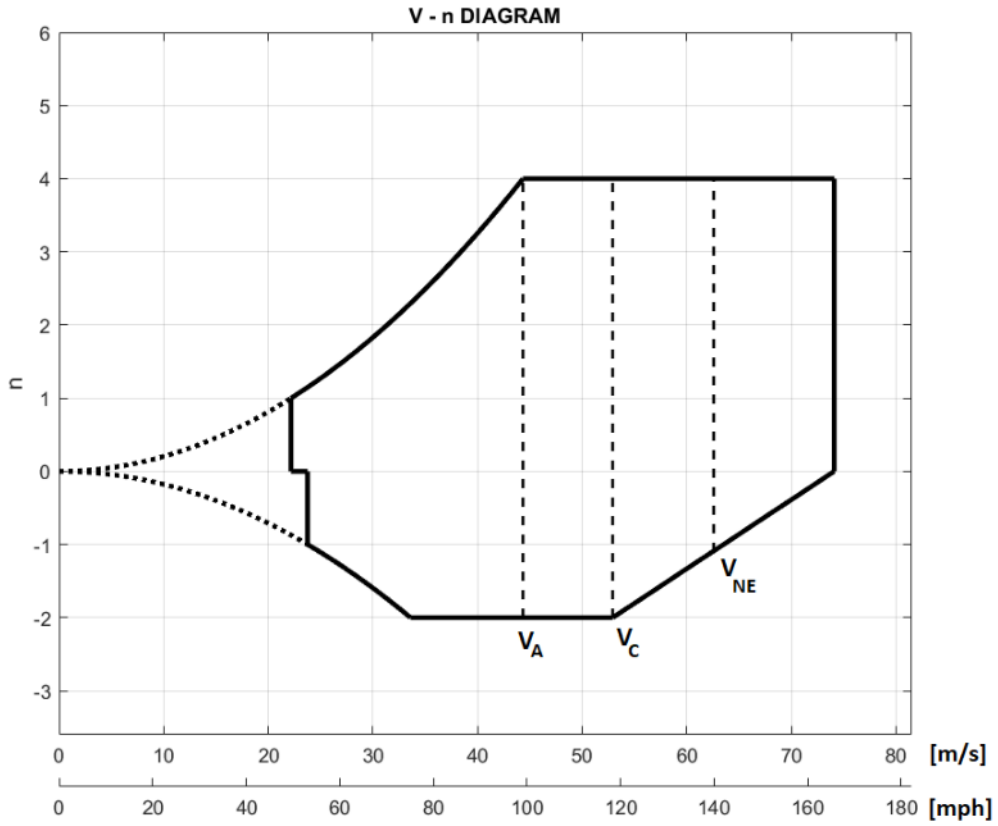
The aircraft controllability, during take-offs and landings, has been demonstrated with a cross wind component of 17 kts.

2.12 CONTROLLED LOAD FACTORS

The MXP 1000 Tayrona is designed to withstand without detrimental permanent structural deformation the next design limit load factors:

Positive Load Factor	=	+4 g
Negative Load Factor (NO INVERTED MANEUVERS APPROVED)	=	-2 g

2.12.1 Load Factor Envelope



2.13 FLIGHT CREW

Minimum: One Pilot.
Maximum: One (1) Pilot + One (1) passenger.

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2.14 KINDS OF OPERATION

The MXP 1000 Tayrona operation is limited for Day-VFR flight only. This paragraph reports the Kinds of Operation Equipment List table, concerning the minimum equipment list required on board for standard version of MXP 1000 Tayrona.

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

Additional equipment, or a different equipment list, for the intended operation may be required by national requirements and also depends on the airspace classification and route to be flown. The owner is responsible for fulfilling these requirements.

SYSTEM, INSTRUMENT and/or EQUIPMENT	*VFR (Visual Flight Rules)*
LIGHTS	
Beacon Light	•
Position Light – Red/Green	•
Landing/Taxi Light	•
NAVIGATION	
Airspeed Indicator	•
Altimeter	•
Magnetic Compass	•
EQUIPMENT	
Aircraft Flight Manual	•
Seat and Shoulder Harness Restraint System	•
COMM/NAV Equipment	•
Circuit Breakers Panel	•
ELECTRICAL SOURCE AND SYSTEMS	
Ammeter	•
Starter Generator	•
Main Battery	•
Flap and Trim System	•
FUEL SYSTEM	
Main Fuel Pump	•
Secondary Fuel Pump (Electrical)	•
OTHER ITEMS	
Slip Indicator	•
First Aid Kit	•
Hand-held fire extinguisher	•
Transponder*	•
ELT *	•

NOTE

The requirement for installation on the aircraft of an ELT (Emergency Locator Transmitter) and a Transponder may vary between countries.

2.15 MARKING AND PLACARDS

2.15.1 Identification Plate

Each aircraft manufactured by *WACSA S.A.S* has a consecutive production reference number (S/N) listed on an identification plate located on the rear-right side of fuselage. To avoid legal actions, under no circumstance, should the identification plate be removed or amended:

AIRCRAFT MANUFACTURED BY
WORLD AIRCRAFT COMPANY SOUTH AMERICA S.A.S
www.wacsa-aero.com/ CALI - COLOMBIA / SOUTH AMERICA

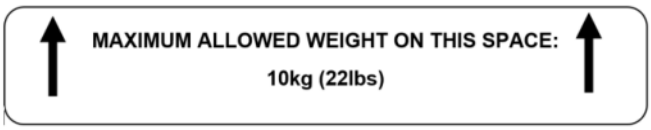
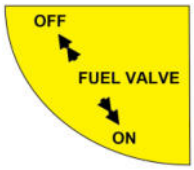
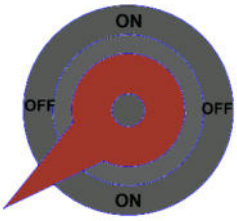
BRAND: *WACSA*
MODEL: *MXP 1000 TAYRONA*
SERIAL NUMBER: *XXXXXXXXXX*
DATE OF MANUFACTURE: *XXXXXXX*
COUNTRY OF ORIGIN: *Colombia*

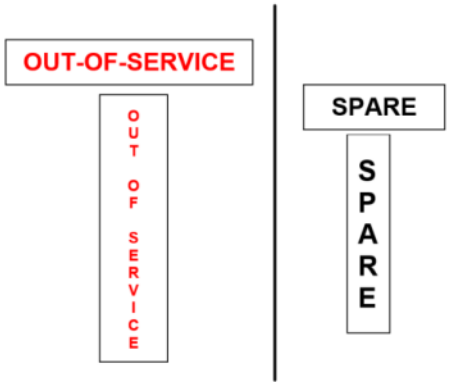
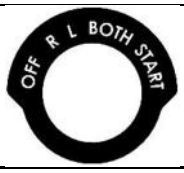
***NOTE**: THIS IDENFITICATION PLATE IS AN INTEGRAL PART OF THIS AIRCRAFT AND IT CAN NOT BE REMOVED UNDER ANY CIRCUMSTANCES, AT THE RISK TO BE SUBJECTED TO LEGAL ACTIONS.*

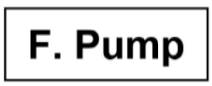
2.15.2 External Markings

	On the Fuel Tank Filler, over the wings.
	• On both wing tips (Fairings) • On trim surface located on left elevator • On elevator surfaces
	• On Ailerons and Flaps surfaces • On wing strut roots.
	Near static pressure port (side of fuselage)
	• Near to fuel drain (fuselage bottom-right side)

2.15.3 Internal Markings (May vary depending on installed equipment)

 		On the space reserved as baggage compartment.
 OR 	Main Fuel Valve	Front-Below cabin seats
	External Power Plug	Right-Side of Front Panel.

		Close to any "inoperative" or "Spare" switch, fuse or element, depending on the aircraft particular equipment and operations.
	*Alternator*	Close to the corresponding switch/Key related with powerplant.
	*Master*	
	*Fuel Pump*	
	Ignition Switch + Mag	
	*Electric Failure alert*	Close to the corresponding warning light on panel.
	*Low Fuel*	

	*Stroboscopic light*	Close to the corresponding switch related with lights.
	*Navigation Lights*	
	*Landing / Beacon Lights*	
	*Main Battery*	Close to the corresponding Circuit Breaker or Switch in Panel.
	*Instruments*	
	*Starter*	
	*Transponder*	
	*Electronic Flight Instrument System (GARMIN)*	
	*Radio*	
	*Lights*	
	*Fuel Pump*	
	*Power Output*	
	*Stick Grip*	

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SECTION 3 – EMERGENCY PROCEDURES

3.1 INTRODUCTION

This section contains procedures that are recommended if an emergency condition should occur during ground operation, takeoff, or in flight. These procedures are suggested as the best course of action for coping with the particular condition described, but are not a substitute for sound judgment and common sense. Pilots should familiarize themselves with the procedures given in this section and be prepared to take appropriate action should an emergency arise.

Most basic emergency procedures, such as power off in flight, are a normal part of pilot training. Although these emergencies are discussed here, this information is not intended to replace such training, but only to provide a source of reference and review, and to provide information on procedures that are not the same for all aircraft. It is suggested that the pilot review standard emergency procedures periodically to remain proficient in them.

NOTE

In case of emergency the pilot should acts as follows:

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

3.2 PREFLIGHT PLANNING

In-route emergencies caused by weather can be minimized or eliminated by careful flight planning and good judgment when unexpected weather is encountered.

3.3 DEFINITIONS OF EMERGENCY TERMS

LAND AS SOON AS POSSIBLE	Defined as landing at the nearest suitable landing area (e.g., open field) without delay. (The primary consideration is to ensure the survival of the occupants)
LAND AS SOON AS PRACTICAL	Defined as landing at a suitable landing area. (The primary consideration is the urgency of the emergency)

3.4 PREFLIGHT INSPECTIONS/ MAINTENANCE

In-flight mechanical problems in the aircraft will be extremely rare if proper preflight inspections and maintenance are practiced. Always perform a thorough walk-around Preflight Inspection before any flight to ensure that no damage occurred during the previous flight or while the aircraft was on the ground. Pay special attention to any oil leaks or fuel stains that could indicate engine problems.

3.5 EMERGENCY BASIC RULES

Aircraft emergencies are very dynamic events. Because of this, it is impossible to address every action a pilot might take to handle a situation. However, four basic actions can be applied to any emergency. They are:

Maintain Aircraft Control - Many minor aircraft emergencies turn into mayor ones when the pilot fails to maintain aircraft control. Remember, do not panic and do not fixate on a particular problem. Over-attention to a faulty warning light during an instrument approach can lead to a pilot induced unusual attitude and possible worse. To avoid this, even in an emergency: fly, navigate, and communicate, in this order. Never let anything interfere with your control of the aircraft. Never stop flying.

Analyze the Situation - In most situations, the procedures listed in this section will either correct the aircraft problem or allow safe recovery of the aircraft. Follow them and use good pilot judgment.

Land as soon as Conditions Permit - Once you have handled the emergency, assess your next move. Handle any non-critical "clean-up" items in the checklist and put the aircraft on the ground. Remember, even if the aircraft appears to be in sound conditions, it may not be.

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3.6 CIRCUIT BREAKERS

Many procedures involve manipulating circuit breakers. The following criteria should be followed during "Circuit Breakers" steps:

● Circuit breakers that are "SET" should be checked for normal condition. If the circuit breaker is not "Set", it may be reset only once. If the circuit breaker opens again, do not reset.

● Circuits breakers that "PULL" should only be pulled and not reset.

3.7 AIRCRAFT ALERTS

The alert lights located on the instrument panel can have the following colors:

AMBER	To Indicate malfunction in the electrical system / battery.
RED	To Alert the aircraft is entering on a stall condition / To alert for Low Fuel Level

3.8 AIRCRAFT EVACUATION

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

1. Seat Belts: UNSTRAP COMPLETELY
2. Headphones: REMOVE
3. Door: OPEN
4. Escape away from flames / hot engine compartment / spilling fuel tanks / hot brakes.

3.9 ENGINE SECURING

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

1.	Throttle Lever:	IDDLE
2.	Mag left and right both	OFF
3.	Fuel Valve Selector	OFF
4.	Electrical Fuel Pump:	OFF

3.10 ENGINE FAILURE DURING TAKE-OFF RUN

1.	Throttle Lever	IDDLE
2.	Rudder	KEEP HEADING CONTROL
3.	Brakes	APPLY AS NEEDED
When Safely Stopped:		
4.	Mag left and right both	OFF
5.	Fuel Valve Selector	OFF
6.	Electrical Fuel Pump:	OFF
7.	Master Switch	OFF
8.	HOT/BAT Circuit Breaker	OUT

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3.11 ENGINE FAILURE IMMEDIATELY AFTER TAKE-OFF

1.	Airspeed	KEEP 55 MPH (IAS) MINIMUM
2.	Find a Suitable place to land Safely	

WARNING	*The immediate landing should be planned straight ahead with only small changes in directions not exceeding 45° to the left or 45° to the right*

3.	Flaps	AS NEEDED

WARNING	*Stall speed increases with bank angle and longitudinal load factor. Acoustic stall warning will in any case provides a correct anticipated clue of incipient stall*

At or right before touch down:

4.	Throttle lever	IDLE
5.	Mag Left and Right Both	OFF
6.	Fuel Valve Selector	OFF
7.	Electric Fuel Pump Switch	OFF
8.	Master Switch	OFF
9.	HOT/BAT Circuit Breaker	OUT

WARNING

A single engine aircraft take off should always be preceded by a thorough take off emergency pilot self-briefing. Decision to try an engine emergency restart right after takeoff should be taken only if environmental situation requires it: pilot shall never ignore the priority of attentively follow an immediate emergency landing.

After possible mechanical engine damage, fire or mayor propeller damage, engine restart attempt is not recommended

3.12 ENGINE FAILURE DURING FLIGHT

3.12.1 Low Fuel Pressure

If Fuel Pressure indicator falls below 2,2 psi:

1. Electric Fuel Pump Switch ON

2. Fuel Valve Selector ON

3. Fuel quantity indicators CHECK BOTH

If Fuel pressure does not build up:

4. LAND AS SOON AS POSSIBLE applying forced landed procedure (See Sec. 3.15)

3.12.2 Low Oil Pressure

If Oil pressure falls below 12 psi:

1. Throttle Lever REDUCE TO MINIMAL PRACTICAL

2. LAND AS SOON AS PRACTICAL

If Oil pressure does not build up:

3. LAND AS SOON AS POSSIBLE applying forced landed procedure (See Sec. 3.15)

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3.12.3 High Oil Temperature

If Oil Pressure is Low, see Sec. *3.12.2 Low Oil Pressure.*

If Oil Pressure is within limits:

1. Throttle Lever REDUCE TO MINIMAL PRACTICAL

If Oil Temperature does not build up:

2. Airspeed INCREASE if practical

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

3. LAND AS SOON AS PRACTICAL

If engine roughness, vibrations, erratic behavior, or high EGT is detected:

4. LAND AS SOON AS POSSIBLE applying forced landed procedure (See Sec. 3.15)

3.12.4 EGT Limit Exceedance

If EGT is above 880 °C, apply following procedure:

If Oil Pressure is Low, see Sec. *3.12.2 Low Oil Pressure.*

If Oil Pressure is within limits:

1. Throttle Lever REDUCE TO MINIMAL PRACTICAL

2. LAND AS SOON AS PRACTICAL

WARNING	If EGT does not come back within limits, the thermostatic valve regulating the water flow to the cylinder heads could be damaged or a coolant leakage can be present in the coolant supply line.

3.13 IN-FLIGHT ENGINE RESTART

WARNING

After possible mechanical engine damage, fire or mayor propeller damage, engine restart attempt is not recommended.

1.	Electrical Fuel Pump Switch	ON
2.	Fuel quantity indicators	CHECK
3.	Fuel Valve Selector	ON
4.	Mag Left and Right Both	ON
5.	Start Button	PRESS
6.	Throttle Lever	SET AS REQUIRED

In case of unsuccessful engine restart:

1. SECURE engine (See Sec. 3.9 ENGINE SECURING)

2. LAND AS SOON AS POSSIBLE applying forced landed procedure (See Sec. 3.15)

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3.14 SMOKE AND FIRE

3.14.1 Engine Fire on the Ground

1.	Fuel Valve Selector	OFF
2.	Electrical Fuel Pump	OFF
3.	Mag Left and Right Both	OFF
4.	Throttle Lever	FULL POWER
5.	Master Switch	OFF
6.	HOT/BAT Circuit Breaker	OUT
7.	Hand Self Extinguisher	AS REQUIRED
8.	Carry the Aircraft out immediately	

3.14.2 Engine Fire During Take-Off

BEFORE ROTATION – ABORT TAKE OFF:

1.	Throttle Lever	IDDLE (Fully Out and hold)
2.	Rudder	KEEP HEADING CONTROL
3.	Brakes	APPLY AS REQUIRED

WITH AIRCRAFT UNDER CONTROL:

1.	Fuel Valve Selector	OFF
2.	Electrical Fuel Pump	OFF
3.	Mag Left and Right Both	OFF
4.	Master Switch	OFF
5.	HOT/BAT Circuit Breaker	OUT

6. Try to choke the fire. Direct the fire extinguisher towards flame base.

7. EVACUATE the aircraft Immediately

3.14.3 Engine Fire In-Flight

1.	Fuel Valve Selector	OFF
2.	Electrical Fuel Pump	OFF
3.	Throttle Lever	FULL FORWARD (Until Engine Stops)
4.	Mag Left and Right Both	OFF
5.	Cabin Vents	OPEN

WARNING	Do not attempt engine restart

6. LAND AS SOON AS POSSIBLE applying forced landed procedure (See Sec. 3.15)

3.14.4 Cabin Fire / Electrical Smoke in Cabin During Flight

1.	Cabin Vents	OPEN

2. Try to choke the fire. Direct the fire extinguisher towards flame base.

If Smoke persists:

3.	Master Switch	OFF
4.	HOT/BAT Circuit Breaker	OUT

5. LAND AS SOON AS POSSIBLE and EVACUATE the aircraft

CAUTION	If the MASTER SWITCH is set to OFF, consider that flaps extension and pitch trim operation is prevented.

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3.14.5 Electrical Smoke / Fire in Cabin on the Ground

1.	Throttle Lever	IDLE
2.	Mag Left and Right Both	OFF
3.	Fuel Valve Selector	OFF
4.	Master Switch	OFF
5.	HOT/BAT Circuit Breaker	OUT
6.	Try to choke the fire. Direct the fire extinguisher towards flame base.	
7.	EVACUATE the aircraft Immediately	

3.15 LANDING EMERGENCIES

3.15.1 Forced Landing Without Engine Power

1.	Flaps	UP
2.	Airspeed	60 MPH (IAS)
3.	Find a suitable place to land safely, plan to approach it upwind.	
4.	Fuel Valve Selector	OFF
5.	Electrical Fuel Pump	OFF
6.	Mag Left and Right Both	OFF
7.	Safety belts	THIGHTEN

When certain to land

8.	Flaps	AS REQUIRED
9.	Master Switch	OFF
10.	HOT/BAT Circuit Breaker	OUT

NOTE	Glide performance of aircraft MXP 1000 Tayrona shows that for each 1000 ft of descends, the horizontal distance covered is 2 mi. (3,2 Km)

3.15.2 Power-On Forced Landing

1.	Flaps	UP
2.	Airspeed	60 MPH (IAS)
3.	Find a suitable place to land safely, plan to approach it upwind.	
4.	Safety belts	THIGHTEN

When certain to land, right before touch down:

5.	Flaps	AS REQUIRED
6.	Fuel Valve Selector	OFF
7.	Electrical Fuel Pump	OFF
8.	Mag Left and Right Both	OFF
9.	Master Switch	OFF
10.	HOT/BAT Circuit Breaker	OUT

3.15.3 Landing with a Flat Nose Tire

1.	Pre-landing Checklist	COMPLETE
2.	Flaps	FULL DOWN (42°)
3.	Land and maintain aircraft NOSE HIIGH attitude as long as possible.	

As aircraft stops:

4.	SECURE engine (See Sec. 3.9)	
5.	EVACUATE Aircraft. (See Sec. 3.8)	

3.15.4 Landing with a Flat Main Tire

1.	Pre-landing Checklist	COMPLETE
2.	Flaps	FULL DOWN (42°)

3. Land the aircraft on the side of runway opposite to the defective tire to compensate the change in direction which is to be expected during final rolling.

4. Touchdown with the GOOD TIRE FIRST and hold aircraft with the flat tire off the ground as long as possible by mean of aileron and rudder control.

As aircraft stops:

5. SECURE engine (See Sec. 3.9)

6. EVACUATE Aircraft. (See Sec. 3.8)

3.16 OTHER EMERGENCIES

3.16.1 General Electrical Failure during Flight

Electrical Failure is identified by the lighting ON of amber led labeled as "charge" simultaneously with a negative ammeter indication. In that case, act as follow:

1.	GPS Switch (If installed)	OFF
2.	Strobe, Nav, Landing and Beacon Lights	OFF
3.	LAND AS SOON AS POSSIBLE	

3.16.2 Trim System Failure

Should trim control be inoperative, act as follows:

1. Breaker CHECK IN

2. Trim Switch CHECK For Correct Position

If Jamming persists:

3. Circuit Breakers CHECK ON

4. ADJUST speed to control aircraft without excessive stick force.

5. LAND AS SOON AS POSSIBLE

In event of trim runaway, act as follows:

1. Circuit Breakers OUT

2. ADJUST speed to control aircraft without excessive stick force.

3. LAND AS SOON AS POSSIBLE

3.16.3 Flap Failure

In event of Flaps-up landing, have in mind:

- Approach Speed = 60 mph (IAS)
- Landing distances will be higher than in normal landing configuration (42°), see Section 5 of this Manual.

3.16.4 Inadvertent Spin Recovery

Intentional spins are **prohibited** in this aircraft. If a spin is inadvertently entered:

1. Throttle IDLE

2. Relief control stick moving it forward and center the controls

3. Apply pedal OPPOSITE to the direction of rotation.

4. Once the spinning stops pull stick control easily in order to level the aircraft.

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SECTION 4 – NORMAL PROCEDURES

4.1 INTRODUCTION

This Section contains the list of inspection tasks and detailed procedures for normal aircraft operation with standard equipment installed.

4.2 RIGGING AND DE-RIGGING THE AIRCRAFT

If de-rigging the aircraft and preparation for transportation is necessary, contact *WACSA S.A.S* for directions.

4.3 PRE-FLIGHT INSPECTIONS

NOTE

It is the duty of the pilot to perform a pre-flight inspection prior to the flight or after a break in flights, when he/she has left the cabin.

4.3.1 Cabin Inspection

1.	*Aircraft documents*	Check if Airworthiness Certificate and POH are current and onboard.
2.	*Weight and Balance*	Check if C.G is within limits (See Section 6).
3.	*Instrument Panel*	Check if all the instruments are properly secured in the panel and have markings on them.
4.	*Safety Belt and Shoulder Harness*	Check these items for condition and proper installation.
5.	*Mag Left and Right Both*	OFF, Extract Key.
6.	*Master Switch*	Turn ON.
7.	*Lights*	Check for proper operation
8.	*Acoustic Stall Warning*	Check for proper operation (If Apply)
9.	*Master switch*	Turn OFF
10.	*Fire Extinguisher*	Check for Condition

4.3.2 Aircraft Walk-Around

To perform the aircraft walk-around, carry out the checklists according to the pattern shown in the next figure. Starting with the cabin and walking anti-clockwise around the aircraft.

WARNING

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

WARNING

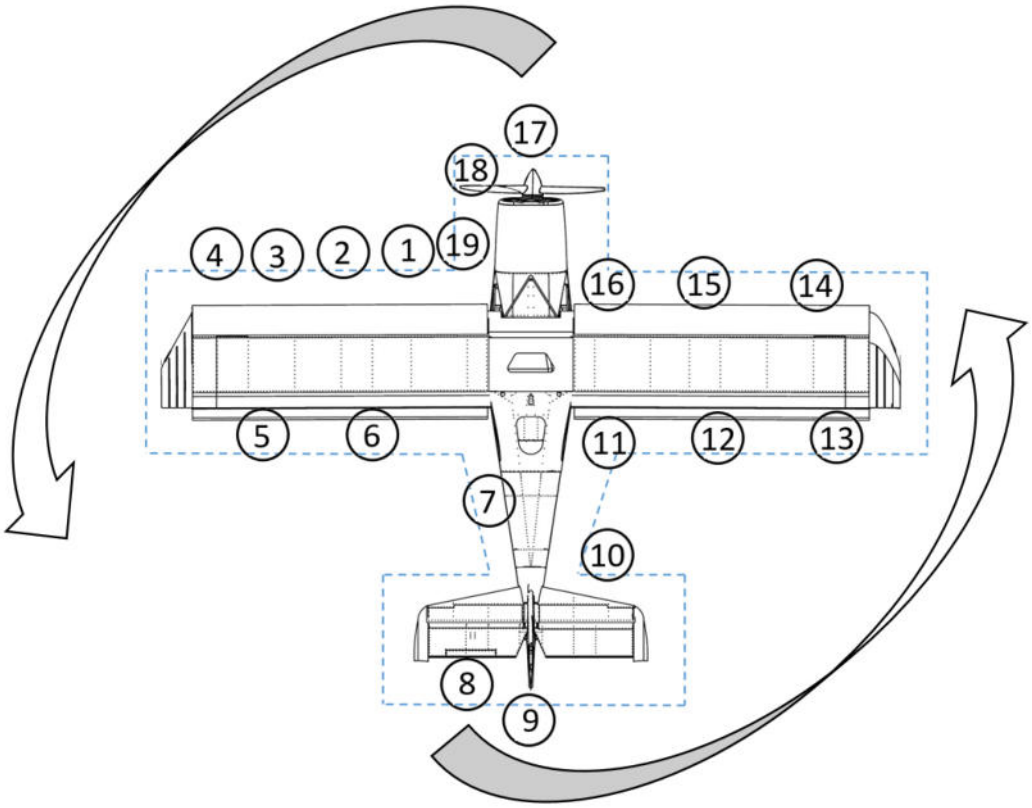
Fuel level indicated by the fuel quantity indicators must be verified by visual check of actual fuel quantity embarked in the tanks: graduated dipstick shall be used.

WARNING

If ignition key is in L/R/BOTH position, a propeller movement can cause the engine starting with consequent hazard for people nearby.

NOTE

Fuel drainage operation must be carried out with the aircraft parked on a level surface. Set cockpit fuel selector valve to ON prior to drain fuel.



1.	*Left fuel filler cap*	Check desired fuel level (use graduated dipstick). Drain the left fuel tank sump by quick drain valve using a cup to collect fuel (drainage operation must be carried with the aircraft parked on a level surface). Check for water or other contaminants. Make sure filler cap is closed.
2.	*Pitot tube*	REMOVE pitot plug and check the pitot for obstructions. Do not blow inside pitot tube.
3.	*Left side leading edge*	Visual inspection of leading edge and wing skin.
4.	*Left Navigation Light*	Visual inspection, CHECK for integrity and fixing.
5.	*Left aileron and flap, hinges*	Visual inspection, CHECK for damage, aileron freedom for plays.

6.	*Left wing struts*	Visual inspection, CHECK for integrity and fixing.
7.	*Left main landing gear*	CHECK inflation, tire condition (cuts, bruises, cracks and excessive wear), alignment, fuselage skin conditions, gear structure and brake hoses: there should be no sign of hydraulic leakage. Check left static port for obstructions.
8.	*Longitudinal trim*	Visual inspection, CHECK for integrity and condition.
9.	*Horizontal Stabilizer and tab*	CHECK Horizontal stabilizer leading edge. Check the actuating mechanism of elevator and the connection with related tab: CHECK free of play, friction. CHECK fuselage bottom and top skin.
10.	*Vertical tail and rudder*	Visual inspection, check free of play, friction.
11.	*Right main landing gear*	CHECK inflation, tire condition (cuts, bruises, cracks and excessive wear), alignment, fuselage skin conditions, gear structure and brake hoses: there should be no sign of hydraulic leakage. Check right static port for obstructions.
12.	*Right wing struts*	Visual inspection, CHECK for integrity and fixing.
13.	*Right aileron and flap, hinges*	Visual inspection, CHECK for damage, aileron freedom for plays.
14.	*Right Navigation Light*	Visual inspection, CHECK for integrity and fixing.
15.	*Right side leading edge*	Visual inspection of leading edge and wing skin.
16.	*Right fuel filler cap*	Check desired fuel level (use graduated dipstick). Drain the left fuel tank sump by quick drain valve using a cup to collect duel (drainage operation must be carried with the aircraft parked on a level surface). Check for water or other contaminants. Make sure filler cap is closed.
17.	*Nose wheel strut and tire*	CHECK inflation, tire condition.
18.	*Propeller and spinner condition*	CHECK for nocks, cracks, dents and other defects, propeller should rotate freely. Check fixing.

19. *Engine Cowling*

Check the engine cowling surface conditions, then open engine inspection doors and perform the following checks:

a) Nacelle inlets and exhausts openings must be free of obstructions. Check connection and integrity of air intake system, visually inspect that ram air intake is unobstructed. If inlet and outlet plugs are installed, they must be removed.

b) Check radiators. There should be no indication of leakage of fluid and they have to be free of obstructions.

c) Check for foreign objects.

d) Only before the first flight of a day:
(1) Verify coolant level in the expansion tank, refill as required up to top (level must be at least at 2/3 of the expansion tank).
(2) Verify coolant level in the overflow bottle: level must be between min. and max. mark.

WARNING	*Before proceeding to the next step be sure that magnetos and Master Switch are OFF with the key extracted.*

(3) Turn the propeller by hand to and from, feeling the free rotation of 15° or 30° before the crankshaft starts to rotate. Turn propeller by hand in direction of engine rotation several times and observe engine for odd noises or excessive resistance and normal compression.
(4) Carburetors: check the throttle and choke cables for condition and installation.
(5) Exhaust: inspect for damages, leakage and general condition.
(6) Check engine mount and silent-blocks for condition.

e) Check oil level and refill as required. Prior to oil check, switch off both ignitions circuits and turn the propeller by hand in direction of engine rotation several times to pump oil from the engine into the oil tank, or let the engine idle for 1 minute. This process is finished when air is returning back to the oil tank and can be noticed by a murmur from the open oil tank. Prior to long flights oil should de added so that the oil level reaches the "max" mark.

f) Drain off Gascolator for water and sediment (drain until no water comes off). Then make sure drain valve is closed and Check drainage hoses are free of obstructions.

g) Verify all parts are fixed or locked: inspect fuel circuit for leakages.

h) CLOSE Engine Cowling doors, checking for proper alignment of cam locks.

i) Check Landing/Taxi light for integrity and operation.

4.4 NORMAL PROCEDURES AND CHECKLISTS

4.4.1 Airspeeds for Safe Operation

	FLAPS	IAS [mph]
Rotation Speed	12°	50
Best Angle of Climb Speed (V_x)	12°	47
Best Rate of Climb Speed (V_y)	12°	60
Approach Speed	12°	60
Final Approach and Speed	42°	55
Manoeuvring Speed (V_A)	0°	95
Never Exceed Speed (V_{NE})	0°	138

4.4.2 Before Engine Starting (After Pre-Flight Inspection)

1. *Safety Belts* — Adjust

2. *Flight Controls* — Check movement smoothness, free of play and friction.

3. *Throttle friction* — Adjust

4. *Circuit Breakers* — Check all IN

5. *Master Switch* — ON and Check Instruments

6. *Electric Fuel Pump* — ON (Check for audible pump noise)

7. *Fuel Valve Selector* — ON

8. *Flap Control* — Cycle fully extended and then set to Take-off

9. *Pitch Trim* — Cycle fully up and down and ONE LED LIGHT ABOVE NEUTRAL

WARNING	Pitch trim position other than in neutral position would affect take off performance and take off rotation execution at the correct V_R

10. *Navigation & Strobe Lights* — ON

11. *Fuel Quantity* — Ensure Fuel Quantity from Pre-Flight Inspections

12. *Doors* — Closed and locked

4.4.3 Engine Starting

1.	*Engine Throttle*	IDLE
2.	*Choke*	As needed
3.	*Fuel Valve Selector*	ON
4.	*Electric Fuel Pump Switch*	ON
5.	*Propeller Area*	Call for CLEAR and visually check

WARNING	Check to insure no person or object is present in the area close to the propeller. Forward lower sector visibility is not possible from inside the cockpit

6.	*Mag Left and Right Both*	BOTH ON
7.	*Contact key*	ON
8.	*Start button*	START
9.	*Oil Pressure*	Check oil pressure rises within 10 sec
10.	*Engine Instruments*	Check within the limits
11.	*Choke*	OFF
12.	*Engine RPM*	2400 - 2900
13.	*Electric Fuel Pump*	OFF
14.	*Fuel Pressure*	CHECK (Min 2,2 psi)

4.4.4 Before Taxying

1.	*Brakes*	CHECK
2.	*Radio and Avionics*	ON
3.	*Altimeter*	CALIBRATE altimeter according to the barometric pressure of the place of operation.

4.4.5 Taxying

1.	*Brakes*	CHECK
2.	*Flight Instruments*	CHECK Altimeter

NOTE

Taxiing can be performed easily due to the nose wheel, which operates simultaneously with the vertical rudder.

Proper use of the nose wheel keeping heels on the floor, avoids excessive brake overheating. This cautious attitude should also apply during take-off.

4.4.6 Prior to Take-Off

1.	*Brake Pedals*	PRESS
2.	*Engine Instruments*	CHECK: • Oil Temperature: 50 - 130 °C • Exhaust Gas Temperature (EGT): *Maximum* 880 °C • Oil Pressure: 12 - 102 psi • Fuel Pressure: *minimum* 2,2 psi
3.	*Electric Fuel Pump*	ON
4.	*Fuel Valve Selector*	Check ON
5.	*Check Both Magneto Switches*	Check both magneto switches at 4000 RPM switching off separately each one. The maximum RPM drop on either switch is 150 RPM, with a maximum allowable RPM drop between them of 100 RPM. Switch both magnetos "ON" before continuing.
6.	*Flaps*	Set 12°
7.	*Pitch Trim*	Check ONE LED LIGHT ABOVE NEUTRAL
8.	*Flight controls*	Check FREE
9.	*Seat Belts*	Check FASTENED
10.	*Doors*	Check Closed and Locked

4.4.7 Take-Off and Climb

WARNING

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

1.	*Full Throttle*	Set and check approximately 5700 ± 100 rpm
2.	*Engine Instruments*	Check parameters within the limits
3.	*Rotation Speed V_R*	50 IAS [mph]
4.	*Flaps*	RETRACT (200 ft AGL retraction airspeed 57 IAS [mph])
5.	*Establish Climb Rate V_y*	60 IAS [mph]
6.	*Electric Fuel Pump*	OFF
7.	*Fuel Pressure*	Check minimum 2,2 psi
8.	*Throttle / Speed*	Reduce at or below 5500 rpm

4.4.8 Cruise

1.	Set Power Throttle	Set power at or below maximum continuous: 5500 rpm
2.	*Engine Instruments*	CHECK Engine Instruments parameters: • Oil Temperature: 50 - 130 °C • Exhaust Gas Temperature (EGT): *Maximum* 880 °C • Oil Pressure: 12 - 102 psi • Fuel Pressure: *Minimum* 2,2 psi

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4.4.9 Before Landing

1.	*Fuel Selector Valve*	ON
2.	*Electric Fuel Pump*	ON
3.	*Brakes*	CHECK
4.	*Landing Light*	ON
5.	*Approach*	• Speed: 60 IAS [mph] • Flaps: 12°

WARNING	*Do not lower flaps under any circumstance when indicated air speed is above 80 mph.*

6.	*Final Approach*	• Speed: 55 IAS [mph] • Flaps: 42° (Full Flap Setting) • Adjust Pitch Trim as required

NOTE	*Suggested Rate of Descent R/D 550 [feet/min] for best landing performances.*

7.	*Optimal Touch down speed*	55 IAS [mph]

4.4.10 Balked Landing / Missed Approach

1.	*Throttle*	FULL
2.	*Speed*	Keep over 50 IAS [mph], climb to V_X or V_Y as applicable
3.	*Flaps position*	12° (Take-off)
4.	*Electric Fuel Pump*	ON

4.4.11 After Landing

1.	Flaps	UP
2.	Electric Fuel Pump	OFF
3.	Landing Light	OFF

4.4.12 Engine ShutDown

1.	*Keep engine running at 2900 rpm for about one minute in order to reduce latent heat.*	
2.	*Mag Left and Right Both*	Both OFF
3.	*Lights*	OFF
4.	*Master Switch*	OFF
5.	*Key*	OFF and Extracted
6.	*Fuel Valve Selector*	OFF

4.5 POST-FLIGHT CHECKS

2.	*Flight controls*	Lock by mean of seat belts
3.	*Doors*	Closed and locked
4.	*Protection plugs*	Set over pitot tube, stall warning, static ports

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SECTION 5 – PERFORMANCE

5.1 INTRODUCTION

The intent of this section is to provide the operator of the MXP 1000 Tayrona with performance information when the aircraft is loaded to maximum Take-Off weight of 600 kg (1320 lb)

Data provided in this Section was obtained by standard flight test methods, data reduction and expansion procedures. Actual Performance may also vary with individual aircraft and piloting techniques, so operations should allow some safety margin to account for these variables.

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

- Airspeed
- External temperature
- Altitude
- Weight
- Runway type and condition

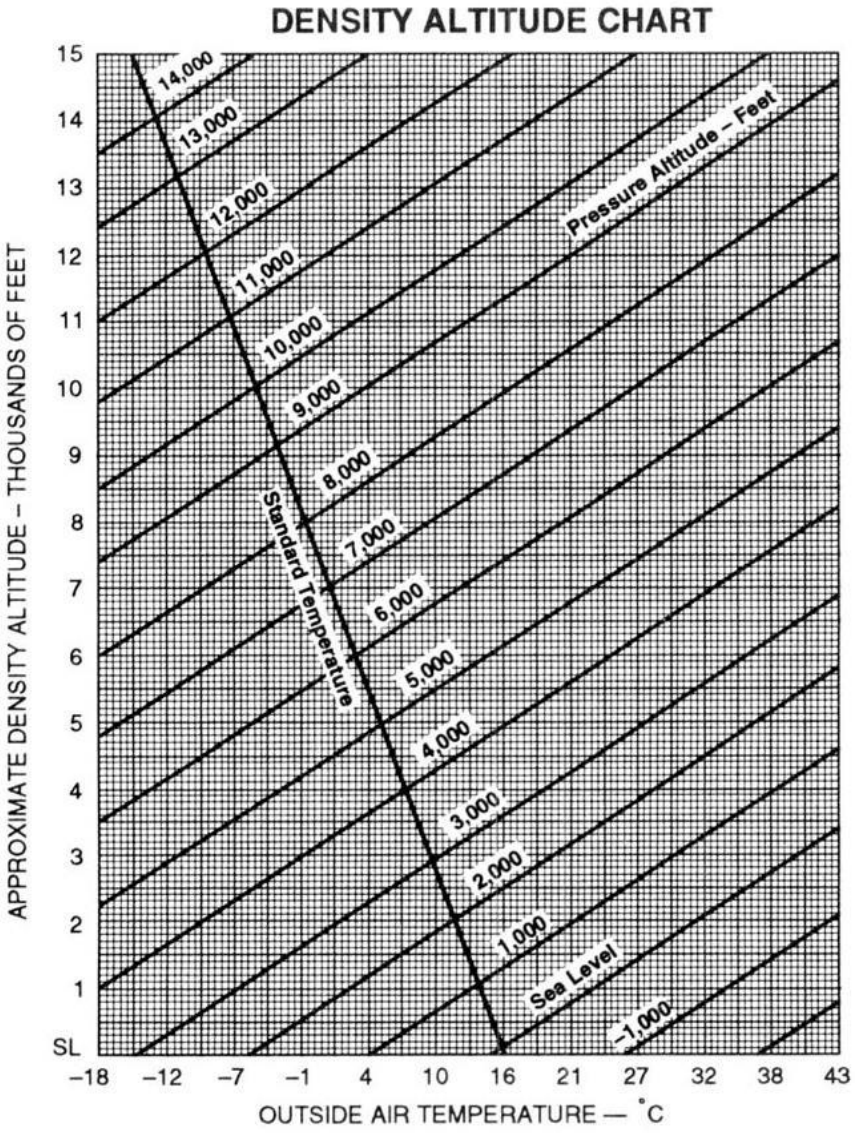
5.2 USE OF PERFORMANCE DATA

Performance date are presented in tabular or graphical form to illustrate the effect of different variables such as altitude, temperature and weight. Given information is sufficient to plan the mission with required precision and safety.

Additional information is provided for each table or graph.

5.3 STANDARD ATMOSPHERE CHART

Some performance information presented in this section is given as a function of density altitude or height in standard atmosphere conditions. In order to know the density altitude for a given pressure altitude and temperature, the follow chart is presented:



Example:

Scope	***Given***	***Find***
Density Altitude	Pressure Alt. = 2000 ft: OAT = 20°C	**3200 ft**

NOTE

Most aircraft accidents occur during the takeoff and landing phase of the flight. Collisions with obstacles during climb out, runway overruns during landing do occur every now and then.

NOTE

A first performance factor, air density, should be of considerable interest to any pilot. For example, aircraft all up weight is something we can do about but the density of the air depends on other factors, and most of them we can´t influence at all.

NOTE

When air density decreases both engine and aerodynamic performance also suffer losses. The reason being is that with a lower density, air molecules are further apart from each other (as such there are less air molecules per m^3 or ft^3).

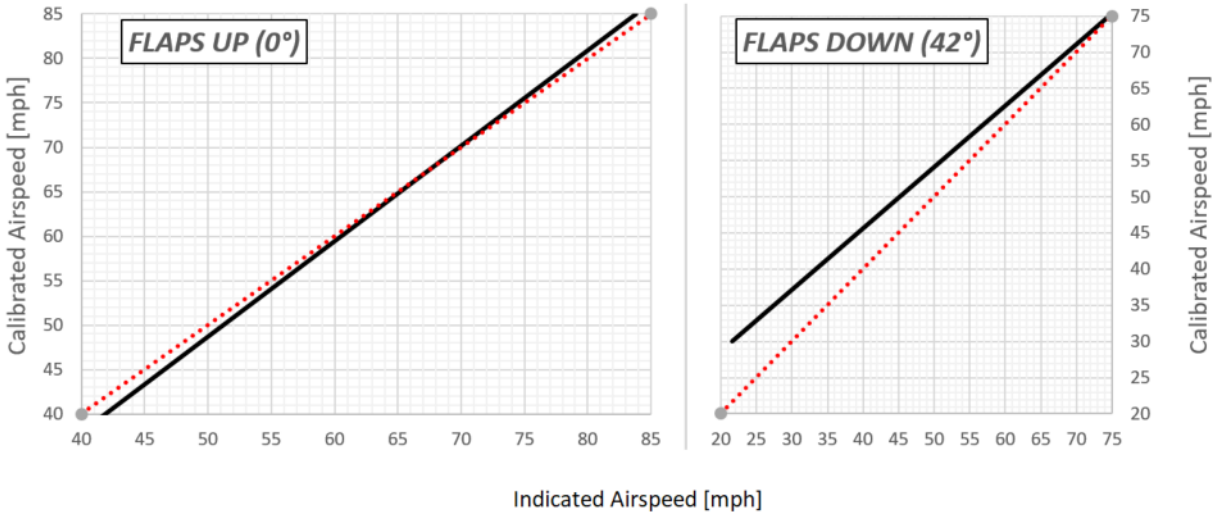
NOTE

A number of factors (altitude/pressure, temperature and humidity) influence air density. At higher altitude, low pressure area, higher temperature and high humidity all have one result: they lower the density of the air. And as a result of that: a reduction in aircraft and engine performance.

5.4 APPROVED DATA

5.4.1 Airspeed Indicator System Calibration

The following charts provide the airspeed calibration for the MXP 1000 Tayrona. To use these charts to determine Calibrated Airspeed, enter the chart at the value of Indicated Airspeed, proceed vertically until the line is encountered; then proceed horizontally to the left or right to read the value for calibrated airspeed. If an Indicated Airspeed is desired from a known Calibrated Airspeed, such as stalling speed, enter the chart at that calibrated airspeed and perform the procedure in reverse.



NOTE

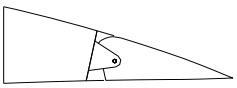
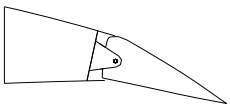
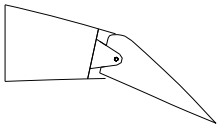
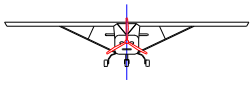
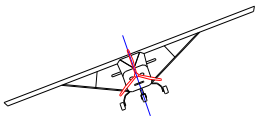
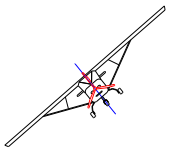
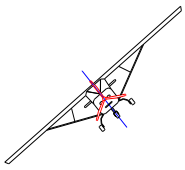
Black-solid line shows calibrated airspeed V_{CAS} as a function of indicated airspeed. Red-dotted Line represents the ideal calibration curve, only for reference.

Example:	Given	Find
	IAS [mph] 55	54 IAS [mph]
	Flap: UP	

NOTE

Indicated airspeed assumes 0 as an instrument error

5.4.2 Stall Speeds

MXP 1000 TAYRONA STALL SPEEDS AT MAXIMUM TAKE-OFF WEIGHT (600 kg) AND IDLE POWER						
ANGLE OF BANK	**FLAPS ZERO** 		**FLAPS 12°** 		**FLAPS 42°** 	
	IAS [mph]	**CAS [mph]**	**IAS [mph]**	**CAS [mph]**	**IAS [mph]**	**CAS [mph]**
0° 	43	42	41	39	38	42
20° 	45	43	43	41	39	44
30° 	47	45	45	43	41	46
60° 	62	59	60	57	54	61

NOTE

Altitude loss during conventional stall recovery, as demonstrated during flight test is less than 100[ft] with banking below 15°. In order to recover, a little power is required.

5.4.3 Take-Off Performance

MXP 1000 TAYRONA – TAKEOFF DISTANCES

Weight =	*600 kg*
Flaps =	*12°*
Rotation Speed =	*50 mph (IAS)*
Speed Over 50 ft Obstacle =	*55 mph (IAS)*
Throttle Lever =	*Full (TakeOff Power)*
Runway =	*Hard, Level and dry surface*

Corrections

Headwind = -15 m for each kt
Tailwind = +15,5 m for each kt

Pressure Altitude [ft]	*Ambient Temperature*											
	-10°C		0°C		10°C		20°C		30°C		40°C	
	Ground Roll [m]	*Total Dist. To Clear 50 ft Obst. [m]*	*Ground Roll [m]*	*Total Dist. To Clear 50 ft Obst. [m]*	*Ground Roll [m]*	*Total Dist. To Clear 50 ft Obst. [m]*	*Ground Roll [m]*	*Total Dist. To Clear 50 ft Obst. [m]*	*Ground Roll [m]*	*Total Dist. To Clear 50 ft Obst. [m]*	*Ground Roll [m]*	*Total Dist. To Clear 50 ft Obst. [m]*
S.L	121	230	132	250	145	272	112	211	170	318	185	342
1000	132	249	145	272	158	295	132	249	185	346	201	372
2000	145	271	158	295	172	321	158	294	203	376	220	405
3000	158	295	173	322	188	350	188	350	221	410	239	441
4000	176	329	193	357	210	388	228	420	248	455	267	490
5000	196	365	214	398	234	432	254	468	275	506	298	545
6000	220	406	239	442	262	480	284	520	308	563	332	606
7000	245	452	267	491	293	535	317	579	344	626	372	675
8000	274	503	300	548	327	595	355	644	384	697	416	752

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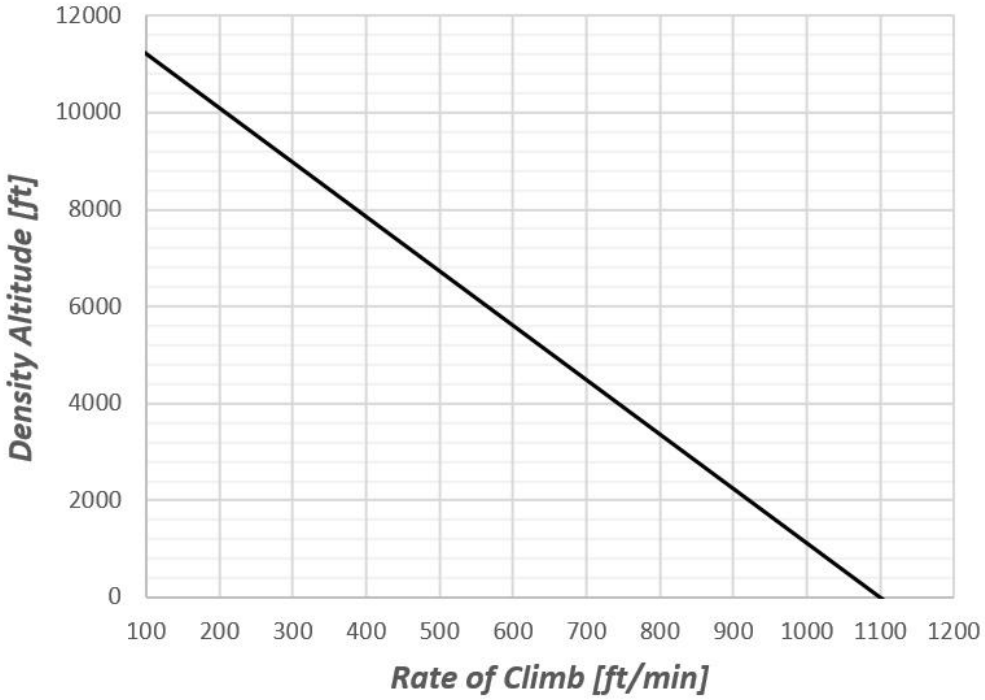
5.4.4 Climb Performance



PRESSURE ALTITUDE [ft]	*RATE OF CLIMB – [ft/min] AT MAXIMUM WEIGHT = 600 kg ; FLAPS = 12°*					
	-10°C	*0°C*	*10°C*	*20°C*	*30°C*	*40°C*
S.L	1483	1325	1173	1027	889	754
1000	1329	1171	1022	878	739	608
2000	1175	1019	870	727	590	459
3000	1020	867	719	577	442	311
4000	868	715	568	428	294	165
5000	715	562	417	278	145	18
6000	561	411	267	129	----	----
7000	409	259	117	----	----	----
8000	256	108	----	----	----	----

5.4.5 Cruise Performance and Endurance

MXP 1000 TAYRONA - CRUISE PERFORMANCE												
RECOMMENDED LEAN MIXTURE STANDARD ATMOSPHERE, ZERO WIND, GROSS WEIGHT = 600 kg FULL FUEL CAPACITY (24 U.S GAL)												
Altitude [ft]	*RPMs*											
	4300			*4800*			*5000*			*5500*		
	IAS [mph]	*Fuel Flow [gal/h]*	*Endurance [HH:MM]*	*IAS [mph]*	*Fuel Flow [gal/h]*	*Endurance [HH:MM]*	*IAS [mph]*	*Fuel Flow [gal/h]*	*Endurance [HH:MM]*	*IAS [mph]*	*Fuel Flow [gal/h]*	*Endurance [HH:MM]*
0	63,9	3,8	5:35	87,2	4,9	4:14	96,6	5,4	3:52	120	6,6	3:10
1000	61,0	3,6	5:49	83,9	4,8	4:23	93,1	5,2	4:00	116,3	6,4	3:16
2000	58,0	3,5	6:04	80,8	4,6	4:33	89,8	5,1	4:08	112,5	6,2	3:22
3000	55,1	3,3	6:20	77,5	4,5	4:43	86,5	4,9	4:16	108,8	6,0	3:28
4000	52,2	3,2	6:37	74,3	4,3	4:53	83,2	4,7	4:25	105,1	5,9	3:35
5000	49,4	3,0	6:56	71,1	4,1	5:05	79,9	4,6	4:35	101,6	5,7	3:42
6000	46,6	2,9	7:17	67,9	4,0	5:17	76,6	4,4	4:46	97,9	5,5	3:49
7000	43,8	2,7	7:39	64,9	3,8	5:30	73,3	4,2	4:57	94,3	5,3	3:57
8000	41,0	2,6	8:04	61,7	3,7	5:45	70,1	4,1	5:09	90,8	5,1	4:05
9000	38,2	2,5	8:32	58,7	3,5	6:00	66,8	3,9	5:22	87,2	4,9	4:14
10000	46,6	2,3	9:03	55,6	3,3	6:17	63,6	3,8	5:35	83,8	4,8	4:24

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5.4.6 Landing Distances

MXP 1000 TAYRONA – LANDING DISTANCES

Landing Weight = ***600 kg***
Flaps = ***42° (Full Flaps)***
Throttle Lever = ***2000 rpm***
Suggested Rate of Descent = ***550 [ft/min]***
Airspeed = ***55 mph (IAS)***
Runway = ***Hard, Level and dry surface***

Corrections

Headwind = -4 m for each kt
Tailwind = +4 m for each kt

Pressure Altitude [ft]	***Ambient Temperature***											
	-10°C		**0°C**		**10°C**		**20°C**		**30°C**		**40°C**	
	Ground Roll ***[m]***	*Total Dist. To Clear 50 ft Obst.* ***[m]***	*Ground Roll* ***[m]***	*Total Dist. To Clear 50 ft Obst.* ***[m]***	*Ground Roll* ***[m]***	*Total Dist. To Clear 50 ft Obst.* ***[m]***	*Ground Roll* ***[m]***	*Total Dist. To Clear 50 ft Obst.* ***[m]***	*Ground Roll* ***[m]***	*Total Dist. To Clear 50 ft Obst.* ***[m]***	*Ground Roll* ***[m]***	*Total Dist. To Clear 50 ft Obst.* ***[m]***
S.L	141	260	146	265	152	270	157	276	162	281	168	286
1000	146	265	152	270	157	276	163	281	168	287	174	293
2000	152	270	157	276	163	282	169	287	175	293	180	299
3000	157	276	163	282	169	288	175	294	181	300	187	306
4000	166	282	173	288	179	294	185	300	192	307	198	313
5000	176	288	183	294	190	301	196	307	203	314	210	320
6000	187	294	194	301	201	308	208	315	215	321	222	328
7000	198	301	205	308	213	315	220	322	228	329	235	336
8000	209	308	217	316	225	323	233	330	241	337	249	344

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5.4.7 Balked Landing Climb

At Sea Level and ISA atmosphere conditions Rate of Climb during a balked landing is 415 [feet/min].

Configuration for better Balked landing conditions is:

Throttle Levers: Take-off Power

Flaps: 12° (takeoff)

Speed: 47 IAS [mph]

5.4.8 Take-Off and Landing Measurements from Grass Runways

It is possible to perform take-off or landing from grass strips with grass not longer than half of the wheel diameter.

Multiply the previous Take-Off and Landing Distances for the following factors, depending on runway conditions:

	Take-Off	***Landing***
Dry Grass	1,2	0,8
Wet Grass	1,3	1,6

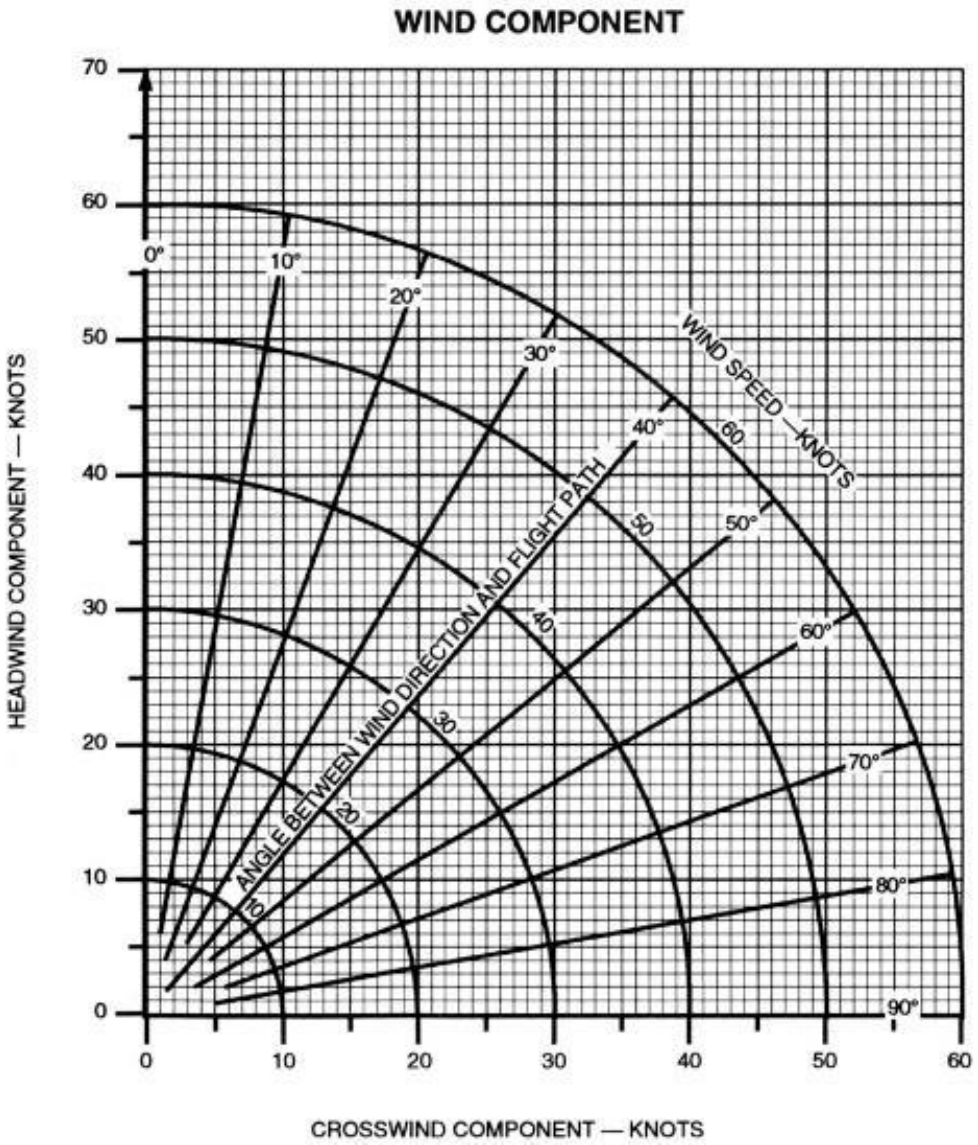
5.4.9 Effect on Flight Performances Caused by Rain or Accumulation of Insects

No observable effect of rain or sediment of insects on the aircraft performance or handling has been noted.

5.4.10 Crosswind Performance

The aircraft controllability, during take-offs and landings, has been demonstrated with a crosswind component of 17 kts.

Refer to the next Analog Chart for the determination of crosswind component:



To read this chart and determine the crosswind and headwind component, perform as follow:

1. Determine the angle between the runway heading and the wind.
2. Find the point where the wind angle line and the wind velocity arc meet.
3. Look to the left to find the headwind component.
4. Find the crosswind component by following the vertical lines down to the bottom of the chart.

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SECTION 6 – WEIGHT AND BALANCE

6.1 INTRODUCTION

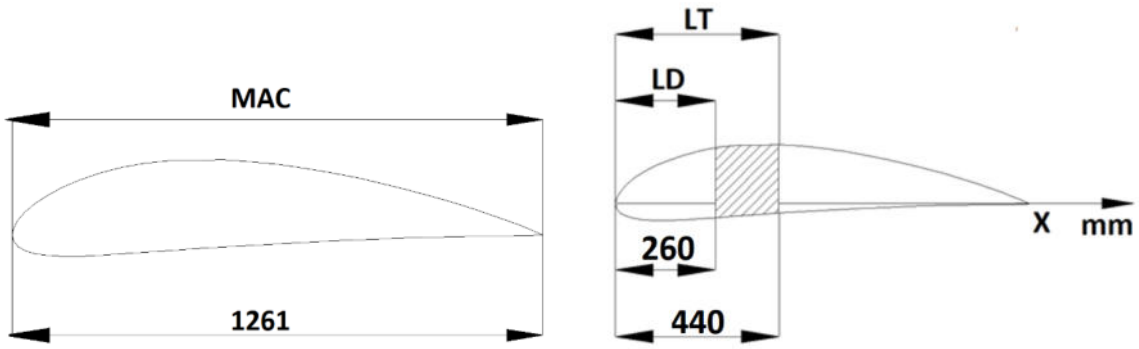
This Section contains the limitations of the useful load, within which the aircraft may be operated safely.

The procedure for weighing aircraft is presented. Any change in the weight of the empty aircraft, e.g. after new equipment is fitted, repairs or repainting, will necessitate re-calculation of the empty weight (Sec. 6.3.4) and modification of the Standard Installed Equipment List (Sec. 6.5).

NOTE

Aircraft must be operated in accordance with the limits concerning the maximum takeoff weight and CG excursion as reported in Section 2.8 and Section 6.2 of this manual.

6.2 CENTER OF GRAVITY LIMITS



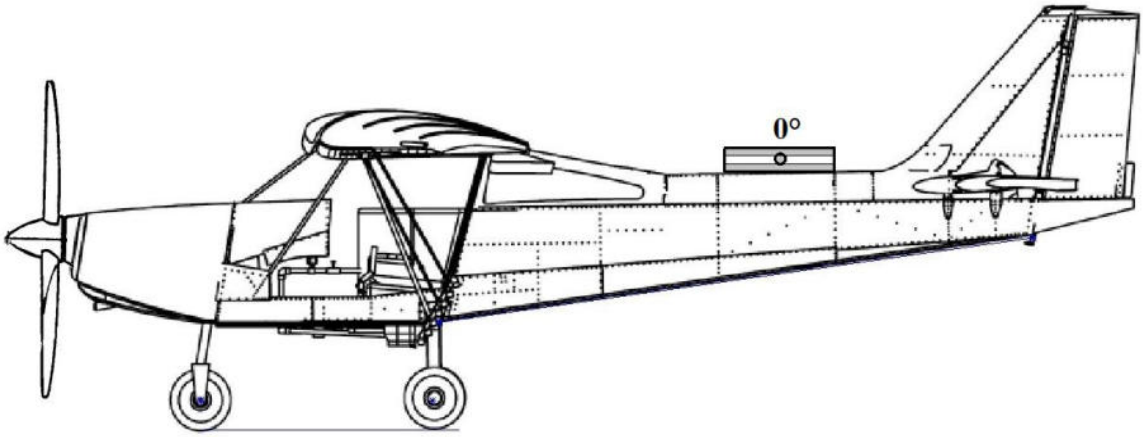
L. D. : Forward Limit
L. T. : Aft Limit
MAC : Mean Aerodynamic Chord [mm]

6.3 WEIGHING PROCEDURES

6.3.1 Preparation

- Carry out weighing procedure inside closed hangar.
- Remove from cabin any objects unintentionally left.
- Insure Flight Manual and mandatory documents are on board.
- Align nose wheel.
- Raise flaps to fully retracted position (0°).
- Place control surfaces in neutral position.
- Aircraft must be on a leveled concrete platform.
- Level the aircraft in reference to the platform varying tire pressure on the nose landing gear.
- Finished plane, painted, with battery, oil and cooling liquid.
- Oil, hydraulic fluid and coolant to operating levels

6.3.2 Levelling

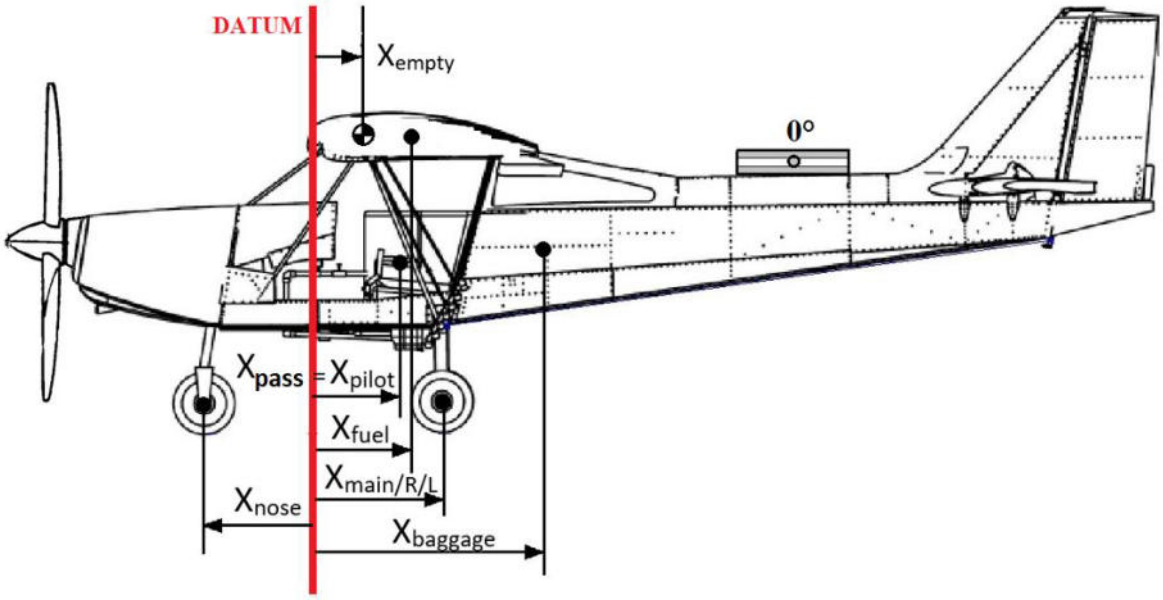


- 0°: Plane of reference where position the level to the verify.

- The aircraft must be on a leveled concrete platform.

- Level the aircraft in reference to the platform varying tire pressure on the nose landing gear.

6.3.3 Weight Distribution Diagram



		FIXED ARM [mm]
Empty Weight	X_{empty}	Section 6.3.4
Nose Wheel	X_{nose}	-790
Main Landing Gear – Right	$X_{main/R}$	662
Main Landing Gear - Left	$X_{main/L}$	662
Pilot	X_{pilot}	510
Passenger	X_{pass}	510
Fuel	X_{fuel}	540
Baggage*	$X_{baggage}$	1280

CAUTION

*A maximum of 30 kg (66 lbs) baggage is allowed for safe flight.

6.3.4 Empty Weight Calculation

The empty weight corresponds to the weight of aircraft structure + full operating fluids (excepting fuel): oil, hydraulic brake fluids, radiator water, etc; and all standard installed equipment (Section 6.5) and should be computed as follows:

Model: MXP 1000 Tayrona; ***S/N***:_____; ***Date***: _____

Datum: *Wing's leading edge.*

MXP 1000 Tayrona	***W [Kg]***	***X [mm]***		***M = W x X [Kg*mm]***
Nose Wheel Weight		X_{nose}	-790	
Right Main Landing Gear Weight		$X_{main/R}$	662	
Left Main Landing Gear Weight		$X_{main/L}$	662	
$W_{Empty} = \Sigma W =$			$\Sigma M =$	

W_{empty} = _____ [kg] $X_{empty} = \frac{\Sigma M}{\Sigma W}$ = _____ [mm]

Signature:
_____
Name and Last Name:
_____

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6.3.5 Operational Weight and Balance Calculation

Model: MXP 1000 Tayrona; ***S/N***:_____; ***Date***: _____

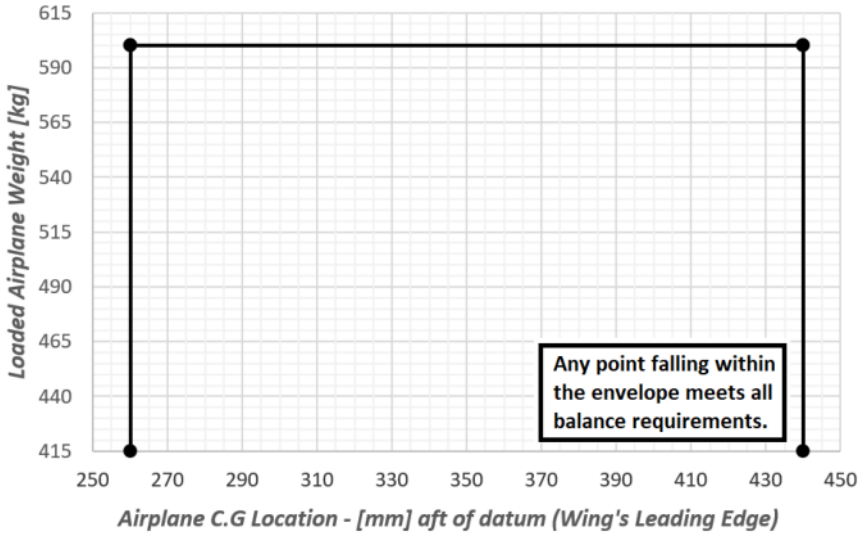
Datum: *Wing's leading edge.*

MXP 1000 Tayrona	*W [Kg]*	*X [mm]*		*M = W x X [Kg*mm]*
Empty Weight		X_{empty}		
Pilot Weight		X_{pilot}	510	
Fuel Weight (Max Capacity 24 U.S Gal)		X_{Fuel}	540	
Passenger Weight		X_{pass}	510	
Baggage Weight		$X_{baggage}$	1280	
$W_{LOADED} = \Sigma W =$			$\Sigma M =$	

W_{LOADED} = _____ [kg] $X_{C.G} = \frac{\Sigma M}{\Sigma W}$ = _____ [mm]

NOTE	Average Fuel Weight = 2,84 kg/Gal (6,2 lb/Gal)

Once Loaded Weight (W_{LOADED}) and Center of Gravity ($X_{C.G}$) are computed, verify that the combination values fall within the follow envelope:



6.4 EXAMPLE OF WEIGHT AND BALANCE COMPUTATION

6.4.1 Empty Weight Example

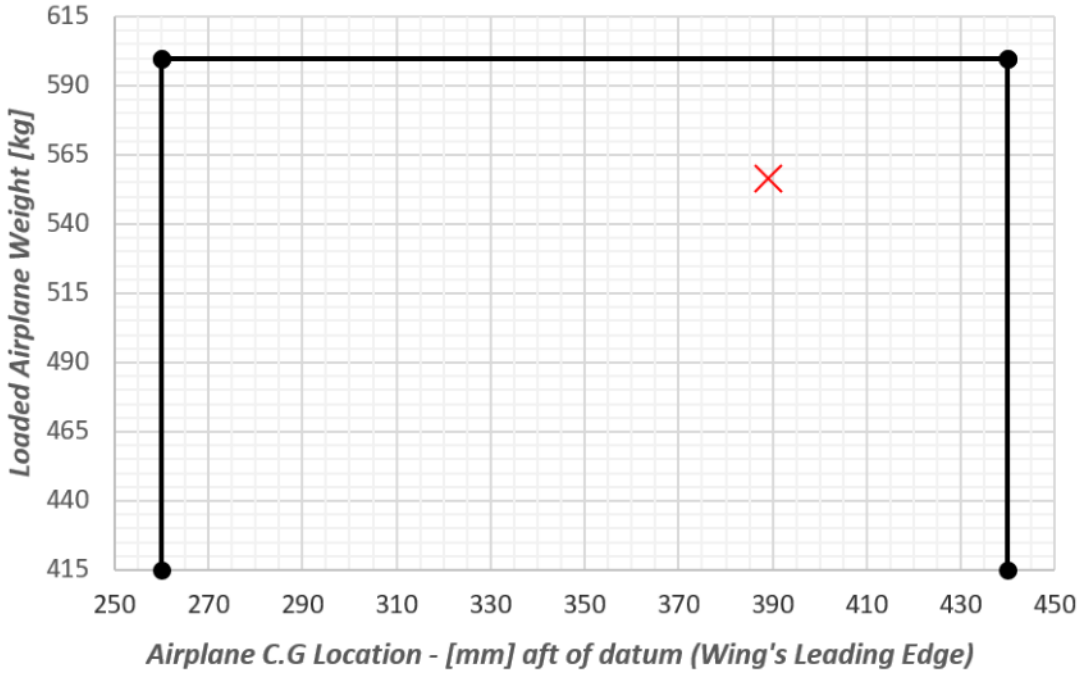
MXP 1000 Tayrona	*W [Kg]*	*X [mm]*		*M = W x X [Kg*mm]*
Nose Wheel Weight	*90*	X_{nose}	**-790**	*-71100*
Right Main Landing Gear Weight	*120*	$X_{main/R}$	**662**	*79440*
Left Main Landing Gear Weight	*120*	$X_{main/L}$	**662**	*79440*
W_{Empty} = ΣW =	*330*		**ΣM =**	*87780*

W_{empty} = *330* **[kg]** $\qquad$ **$X_{empty} = \frac{\Sigma M}{\Sigma W}$ =** *266* **[mm]**

6.4.2 Operational Weight and Balance Example

MXP 1000 Tayrona	*W [Kg]*	*X [mm]*		*M = W x X [Kg*mm]*
Empty Weight	*330*	X_{empty}	*266*	*87780*
Pilot Weight	*85*	X_{pilot}	**510**	*43350*
Fuel Weight (Max Capacity 24 U.S Gal)	*56,7 kg (20 Gal)*	X_{Fuel}	**540**	*30618*
Passenger Weight	*70*	X_{pass}	**510**	*35700*
Baggage Weight	*15*	$X_{baggage}$	**1280**	*19200*
W_{LOADED} = ΣW =	*556,7*		**ΣM =**	*216648*

W_{LOADED} = *556,7* **[kg]** $\qquad$ **$X_{C.G} = \frac{\Sigma M}{\Sigma W}$ =** *389* **[mm]**



Since the pair (X_{CG} ; W_{LOADED}) falls within the envelope, in that particular load configuration, the aircraft is considered AIRWORTHY.

6.5 STANDARD INSTALLED EQUIPMENT

NOTE

The Equipment List may vary from aircraft to aircraft depending on the customizations the owner chooses to do. The Lists presented here corresponds to the three options offered normally as standard.

NOTE

Weight of the Standard Installed Equipment is included in the Empty Weight of the aircraft.

(ENTRY-LEVEL VERSION)	
MXP 1000 TAYRONA - STANDARD EQUIPMENT LIST	
Type of Equipment	***Brand/Model***
Engine	*ROTAX / 912-ULS*
Fuel Pump	*FACET / 40106*
Battery	*Tb-Plus / TB 12-18*
Propeller	*May Vary (See Section 1.4.3)*
Flaps Motor	*CR22*
EFIS	*GARMIN GDU 460*
Radio	*ICOM / A220*
Transponder	*GARMIN / GTX 335*
Altimeter	*FALCON / ALT20IMF-3*
Vertical Speed Indicator	*FALCON / VSI2FM-3*
Airspeed Indicator	*UMA / 16-310-140D*
Water Temp. Indicator	*UMA / 12-360-300F*
Oil Temp. Indicator	*UMA / 12-260-300F*
EGT Indicator	*UMA / 12-560-1K7*
Oil Press. Indicator	*UMA / 4-260-100U*
Fuel Press. Indicator	*UMA / N04212U015P000*
Tachometer	*AVIASPORT / IM105*
Ammeter	*UMA / 15-260-060*
Hourmeter	*DATCON / 100690*
Master Switch	*SPLIT MASTER / S1994-1-1*
Ignition Switch + Mag	*ACS / A-510-2*
Magnetic Compass	*FALCON / MCVC-2L-A-M*
Lights NAV-STROB	*AVEO / AVE-WPSTG/R-20D*
Beacon Light	*AVEO / 927ACB-R-12V-45*
Landing Light	*PSA / 01-0771833-10*
Tires	*AIRTRAC / AA1F2*
Main Wheels and Brakes	*MATCO / WHLF600*
Nose Wheel	*MATCO / MH6N.75S*

(MID-RANGE VERSION)	
MXP 1000 TAYRONA - STANDARD EQUIPMENT LIST	
Type of Equipment	***Brand/Model***
Engine	*ROTAX / 912-ULS*
Fuel Pump	*FACET / 40106*
Battery	*Tb-Plus / TB 12-18*
Propeller	*May Vary (See Section 1.4.3)*
Flaps Motor	*CR22*
EFIS	*GARMIN GDU 460*
Radio	*MICROAIR / 827TRA1001-Q*
Transponder	*GARMIN / 010-01757-06*
Altimeter	*UMA / 5-411-20*
Airspeed Indicator	*UMA / 16-210-140*
Water Temp. Indicator	*UMA / 12-360-300F*
Oil Temp. Indicator	*UMA / 12-260-300F*
EGT Indicator	*UMA / 12-560-1K7*
Oil Press. Indicator	*UMA / 4-260-100U*
Fuel Press. Indicator	*UMA / N04212U015P000*
Tachometer	*AVIASPORT / IM105*
Ammeter	*UMA / 15-260-060*
Hourmeter	*HONEYWELL / LM-HH2AS-H21*
Master Switch	*SPLIT MASTER / S1994-1-1*
Ignition Switch + Mag	*ACS / A-510-2*
Magnetic Compass	*FALCON / MCVC-2L-A-M*
12V Power Outlet	*LONE STAR / LS03-05025-NA*
Lights NAV-STROB	*AVEO / AVE-WPSTG/R-20D*
Beacon Light	*AVEO / 927ACB-R-12V-45*
Landing Light	*PSA / 01-0771833-10*
Tires	*AIRTRAC / AA1F2*
Main Wheels and Brakes	*MATCO / WHLF600*
Nose Wheel	*MATCO / MH6N.75S*

(TOP-OF-THE-RANGE VERSION)	
MXP 1000 TAYRONA - STANDARD EQUIPMENT LIST	
Type of Equipment	***Brand/Model***
Engine	*ROTAX / 912-ULS*
Fuel Pump	*FACET / 40106*
Battery	*Tb-Plus / TB 12-18*
Propeller	*May Vary (See Section 1.4.3)*
Flaps Motor	*CR22*
EFIS	*GARMIN GDU 460*
Radio	*ICOM / A220*
Transponder	*GARMIN / 010-01757-06*
Altimeter	*FALCON / ALT20IMF-3*
Airspeed Indicator	*UMA / 16-310-140D*
EFIS (2x 10.6" Display)	*GARMIN GDU 460*
Engine Monitoring System	*GARMIN / Interface GEA24*
Hourmeter	*HONEYWELL / LM-HH2AS-H21*
Master Switch	*SPLIT MASTER / S1994-1-1*
Ignition Switch + Mag	*ACS / A-510-2*
Magnetic Compass	*FALCON / MCVC-2L-A-M*
12V Power Outlet	*LONE STAR / LS03-05025-NA*
Lights NAV-STROB	*AVEO / AVE-WPSTG/R-20D*
Beacon Light	*AVEO / 927ACB-R-12V-45*
Landing Light	*PSA / 01-0771833-10*
Tires	*AIRTRAC / AA1F2*
Main Wheels and Brakes	*MATCO / WHLF600*
Nose Wheel	*MATCO / MH6N.75S*

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SECTION 7 – AIRCRAFT AND SYSTEMS DESCRIPTION

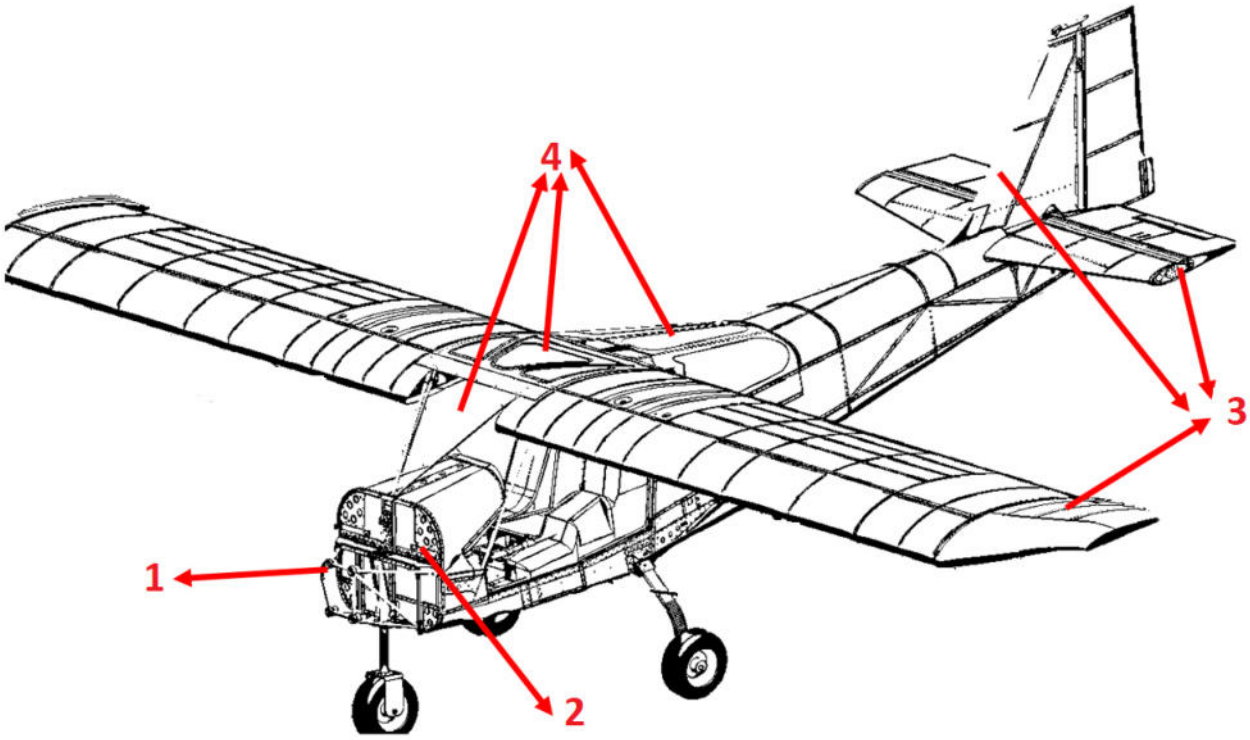
7.1 INTRODUCTION

This Section provides description of the aircraft and its systems.

7.2 AIRFRAME

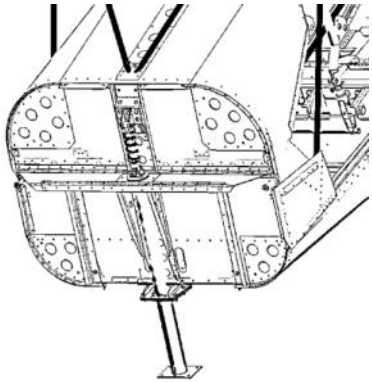
7.2.1 Fuselage

The fuselage is made of aluminum, in a single-hollow structure, with elements in molybdenum chrome steel. Transparent surfaces in 2 mm thick polycarbonate and fiberglass fairings.



1. Engine Mount
2. Firewall
3. Fiberglass Fairings
4. Plexiglass (Polycarbonate) windshields

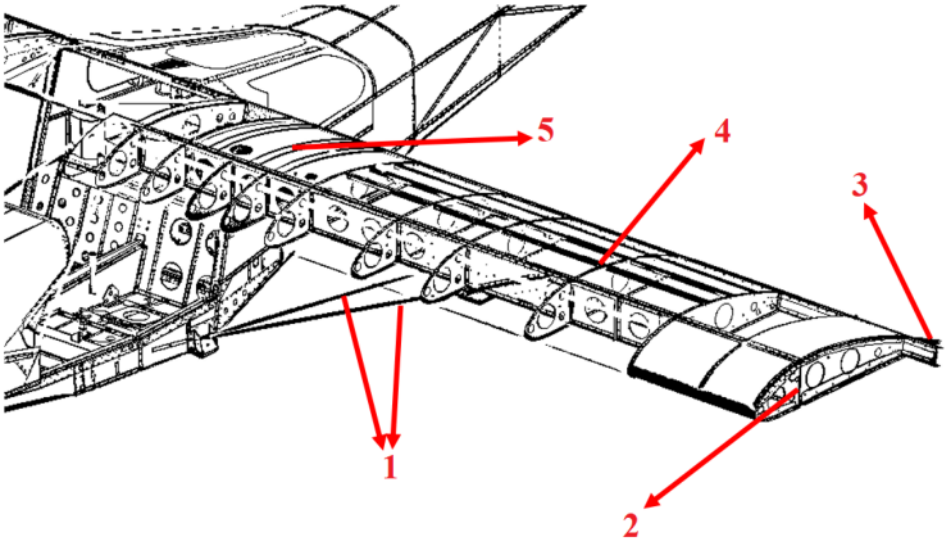
Cabin is separated from the engine by a piece of steel with a thickness of 0,024 inches.



Steel Firewall

7.2.2 Wings

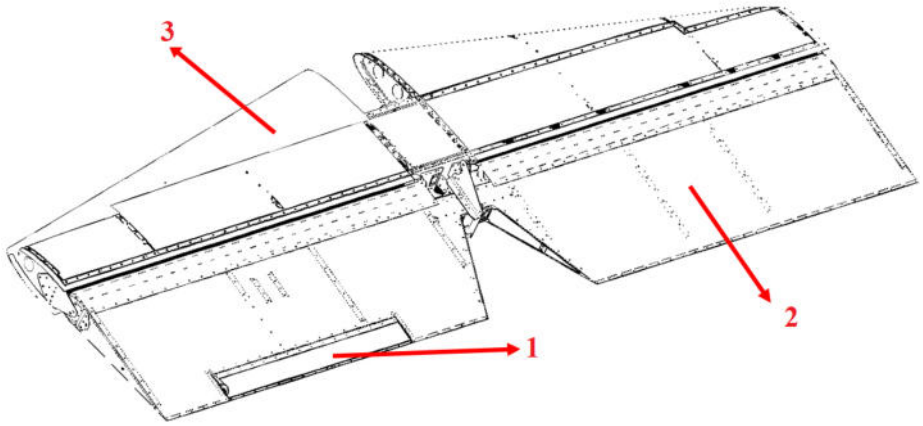
Made of aeronautical grade aluminum with preformed ribs and load carrying aluminum skins; wing tips (fairings) made of fiberglass, with aluminum tanks with a capacity of 12 US-Gal each. The wings are attached to the fuselage through struts made of molybdenum-chrome steel.



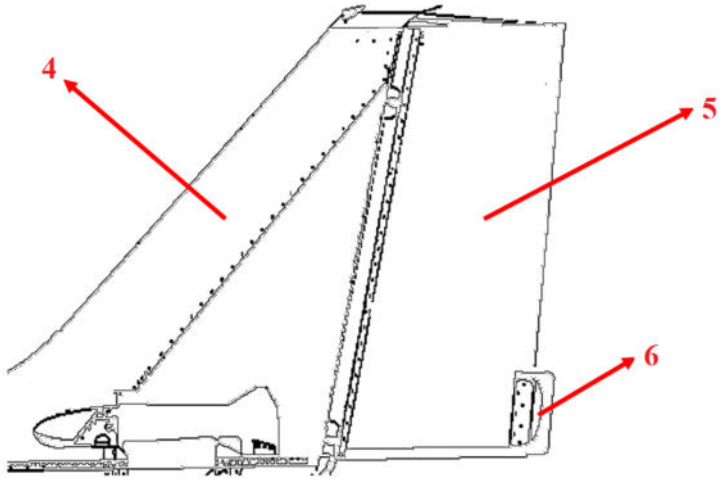
1. Struts
2. Main wing spar
3. Rear/Secondary wing spar
4. Ribs
5. Fuel Tank

7.2.3 Empennage

Vertical tail, directional rudder, stabilizer and elevator made of aluminum with an electrical trim in the elevator and fixed metallic trim tab on the rudder:



1. Elevator Trim **2.** Elevator **3.** Horizontal Stabilizer

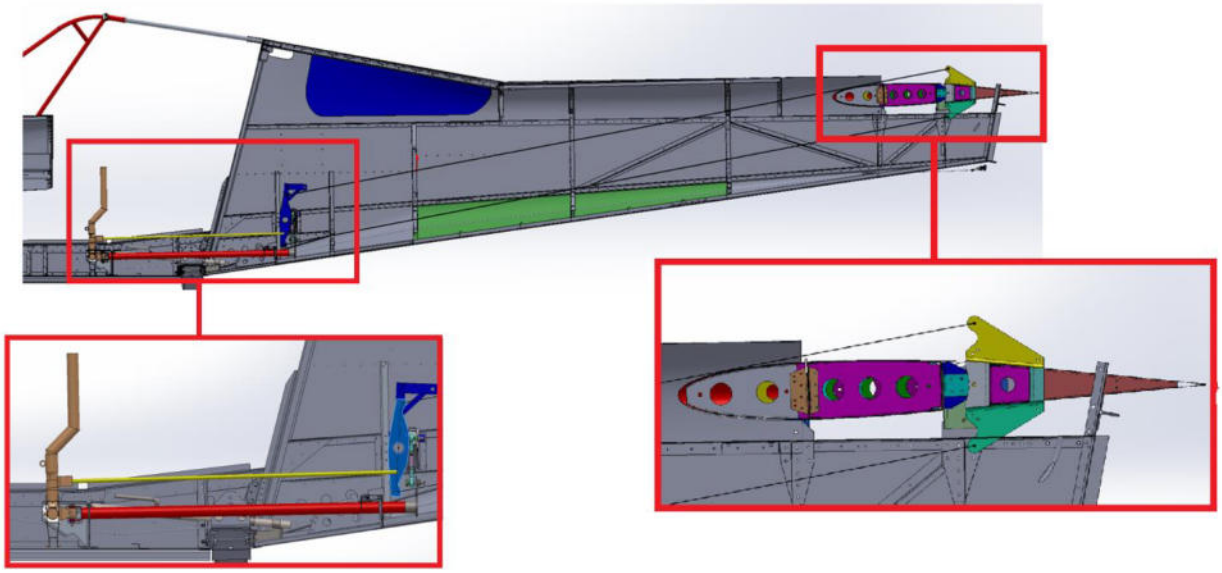


4. Vertical Stabilizer **5.** Rudder **6.** Vertical Fixed Trim Tab

7.3 FLIGHT CONTROLS

The aircraft features conventional flight control systems based on pedals and stick. Aileron and flap controls through shafts and bearings, while elevator and rudder through stainless steel cable.

7.3.1 Elevator



Details of Elevator Control (Steel cable)

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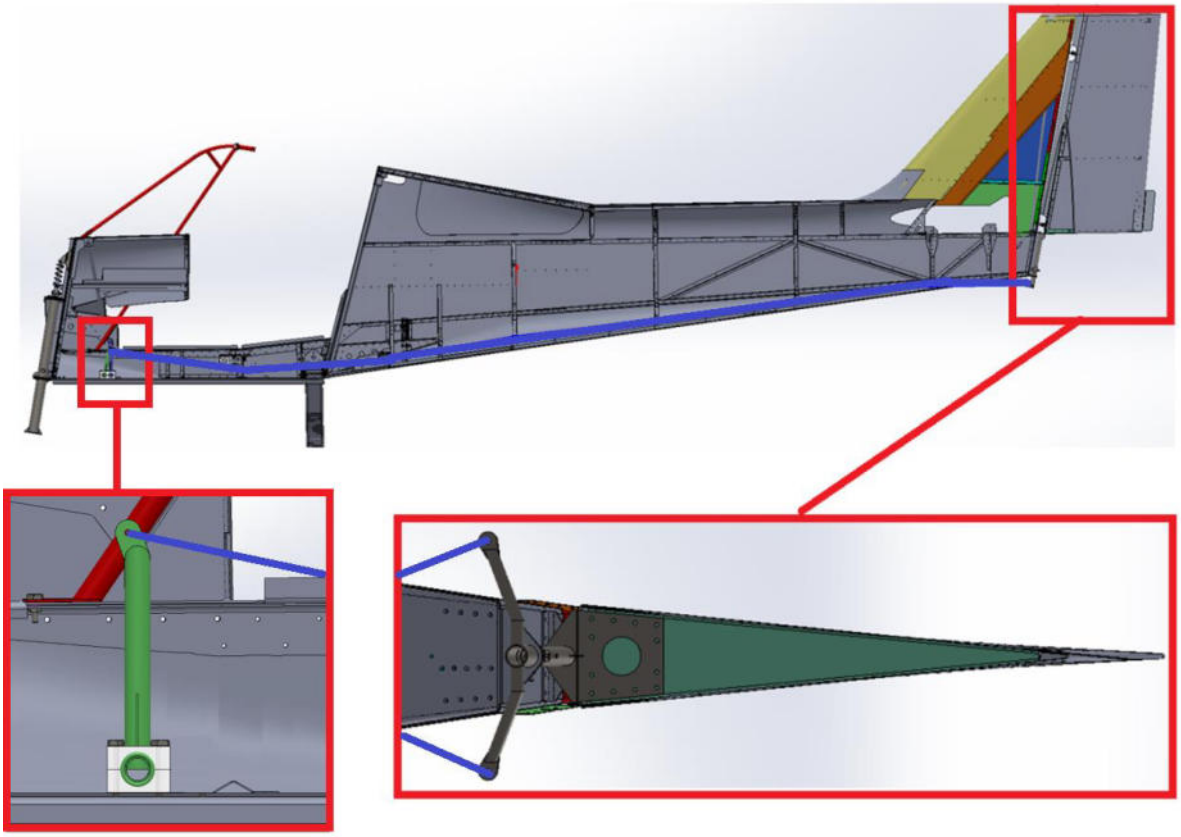
7.3.2 Rudder



Details of Rudder Control (Steel cable)

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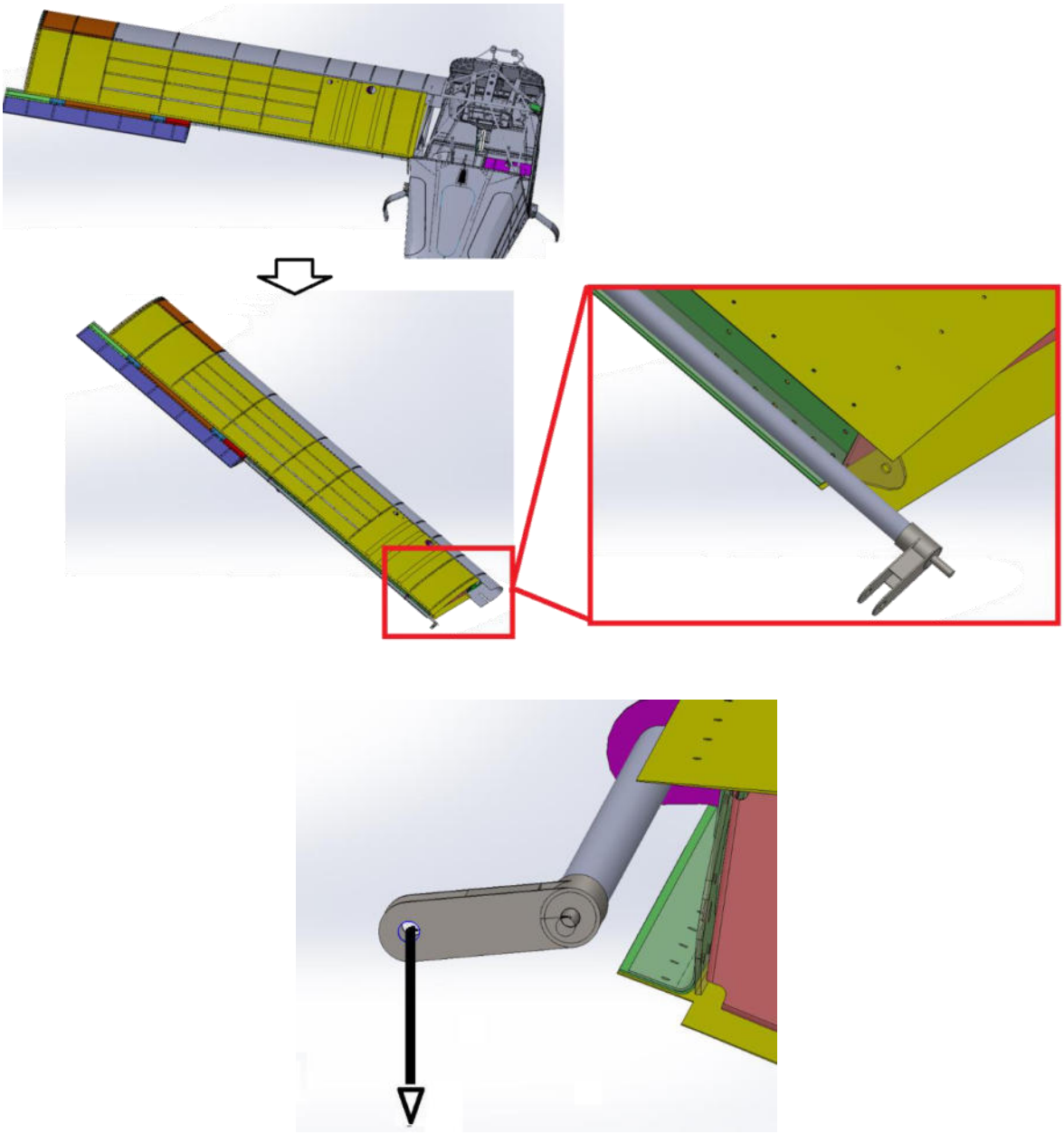
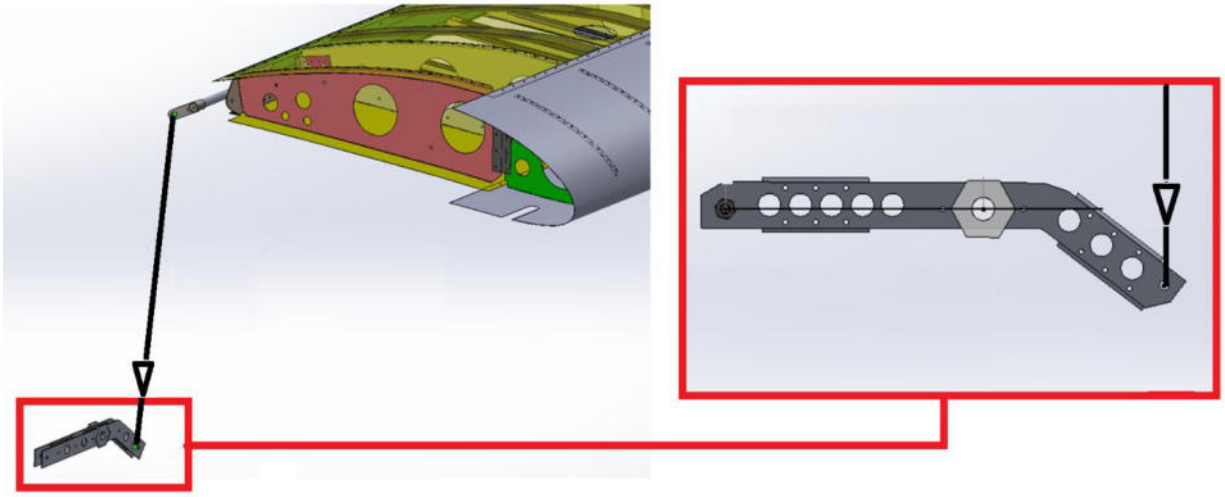
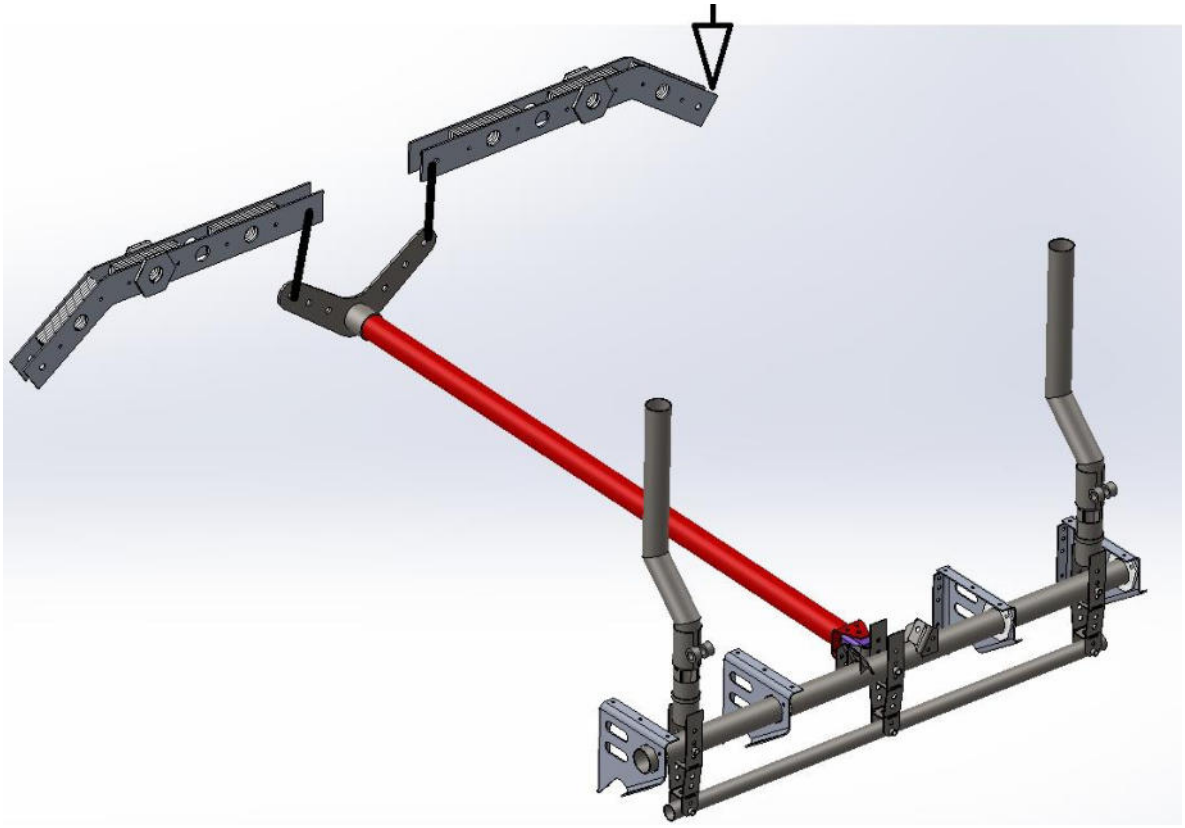
7.3.3 Ailerons

The path followed by the aileron mechanism is shown:



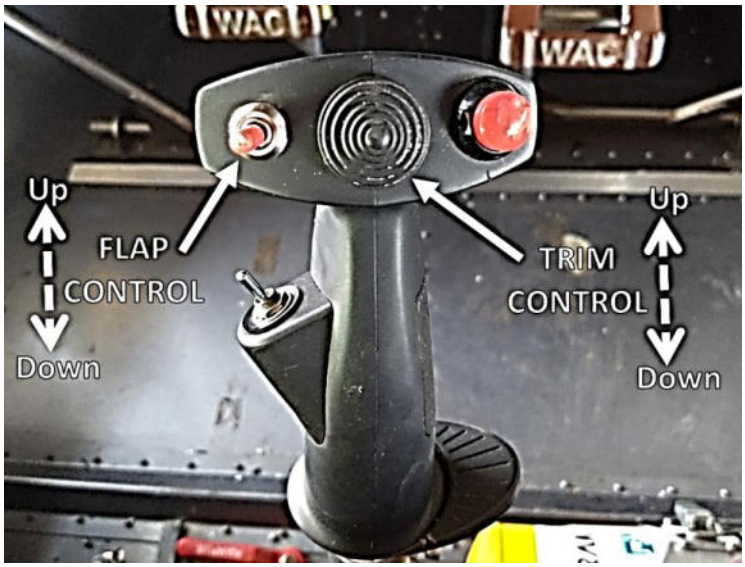




7.3.4 Flap and Elevator Trim

Flap and Elevator Trim are moved via a mechanism powered by electric motors located in the lower-behind section of cabin seats.

These motors are controlled by buttons in stick, as shown:



The Trim and Flap position are indicated by 2 light indicators located in the left side of panel:

7.4 PANEL OF INSTRUMENTS

The MXP 1000 Tayrona features as standard, 3 Panel of instrument's Options: Entry Level, Mid-Range and Top-of-the-Range:

7.4.1 Entry Level – Panel of Instruments

1. *"Low Fuel" Indicator Led*

2. *"Charge" Indicator Led*

3. *Flap Position Indicator*

4. *Trim Position Indicator*

5. Split Alternator / Master Switch

6. *Keyed Ignition Switch with Start Position and Electrical Control of Magnetos*

7. Airspeed Indicator

8. Altimeter

9. Standard 3-1/8" cutout for Free Usage

10. Vertical Speed Indicator

11. Toggle Switches*

12. Choke Control Knob

13. Transponder (For base Model: <u>OPTIONAL</u> depending on local regulations)

14. VHF Radio

15. *Water Temperature Indicator*

16. *Exhaust Gases Temperature (EGT) Indicator*

17. *Oil Temperature Indicator*

18. *Oil Pressure Indicator*

19. *Tachometer*

20. *Fuel Pressure Indicator*

21. *Ammeter*

22. Hourmeter

23. Circuit Breakers*

7.4.2 Mid-Range – Panel of instruments

1. *"Low Fuel" Indicator Led*
2. *"Charge" Indicator Led*
3. *Flap Position Indicator*
4. *Trim Position Indicator*
5. *Split Alternator / Master Switch*
6. *Keyed Ignition Switch with Start Position and Electrical Control of Magnetos*
7. *GARMIN GDU 460 Display (10.6")*
8. *Toggle Switches**
9. *Airspeed Indicator*
10. *Altimeter*
11. *Hourmeter*
12. *Transponder.*
13. *Tachometer*
14. *Oil Pressure Indicator*
15. *Oil Temperature Indicator*
16. *Water Temperature Indicator*
17. *Fuel Pressure Indicator*
18. *Exhaust Gases Temperature (EGT) Indicator*
19. *VHF Radio*
20. *Ammeter*
21. *12V Power Outlet*
22. *Circuit Breakers**
23. *Choke Control Knob*

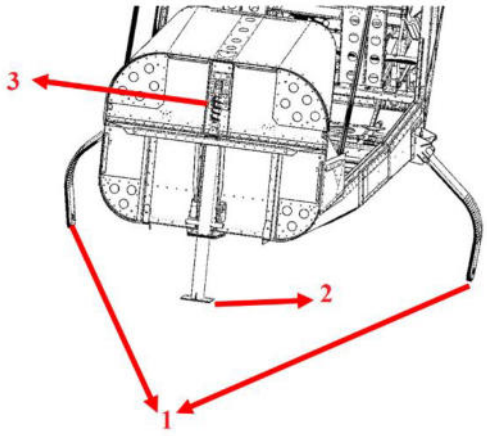
7.4.3 Top-of-the-Range – Panel of Instruments

1. *Flap Position Indicator*
2. *Trim Position Indicator*
3. Split Alternator / Master Switch
4. *Keyed Ignition Switch with Start Position and Electrical Control of Magnetos*
5. GARMIN GDU 460 Display (10.6")
6. Toggle Switches*
7. *"Low Fuel" Indicator Led*
8. *"Charge" Indicator Led*
9. Airspeed Indicator
10. Altimeter
11. VHF Radio
12. Transponder
13. Hourmeter
14. GARMIN GDU 460 Display (10.6")
15. Circuit Breakers*
16. 12V Power Outlet
17. Choke Control Knob

**Toggle Switches and Circuit Breakers distribution and number may vary depending on what is installed in the aircraft.*

7.5 LANDING GEAR

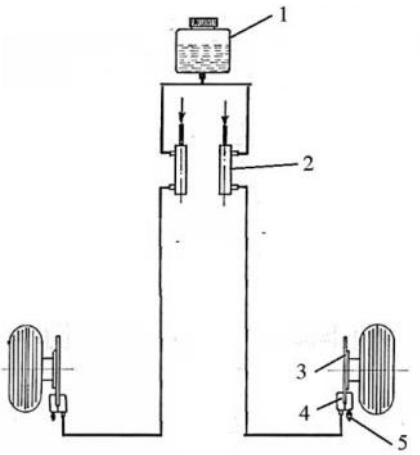
Nose landing gear made of steel with a directional wheel and spring loaded shock absorber. Main landing gear made of aluminum with shock struts, full independent hydraulic brakes controlled by pedals.



1. Main Landing Gear
2. Nose Landing Gear
3. Spring Shock Absorber

7.5.1 Braking System

The aircraft is equipped with Matco® hydraulic disc brakes. The system consists of a simple hydraulic circuit that activate independent calipers of left and right wheels of the main landing gear. The circuit implements two brake cylinders located on rudder pedals which are connected via flexible pressure line with brake calipers. The brake fluid container is located at the highest point of the brake system on the firewall:



1. Brake Fluid Container
2. Brake Cylinder
3. Brake Disc
4. Brake Caliper
5. Bleeding valve

7.6 SEAT AND SAFETY HARNESS

The MXP 1000 Tayrona features 2 seats each one with its conventional safety harness:

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7.7 BAGGAGE COMPARTMENT

The aircraft have a big space behind the two seats. The maximum allowed weight to be carried on this space is 30 kg (66 lbs) for safety flight after properly tied.

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7.8 DOORS, WINDOWS AND EXITS

In the standard version, and in order to obtain a maximum-view-experience; windshield, windows and doors are made of clear commercial polycarbonate (Plexiglas), as well as the snap vents:

***These doors configuration may vary depending upon specific requirements.*

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The door-locking mechanism works simple and intuitively:

LOCK

UNLOCK

***This door-locking mechanism may vary depending upon specific requirements.*

7.9 POWERPLANT

7.9.1 Engine

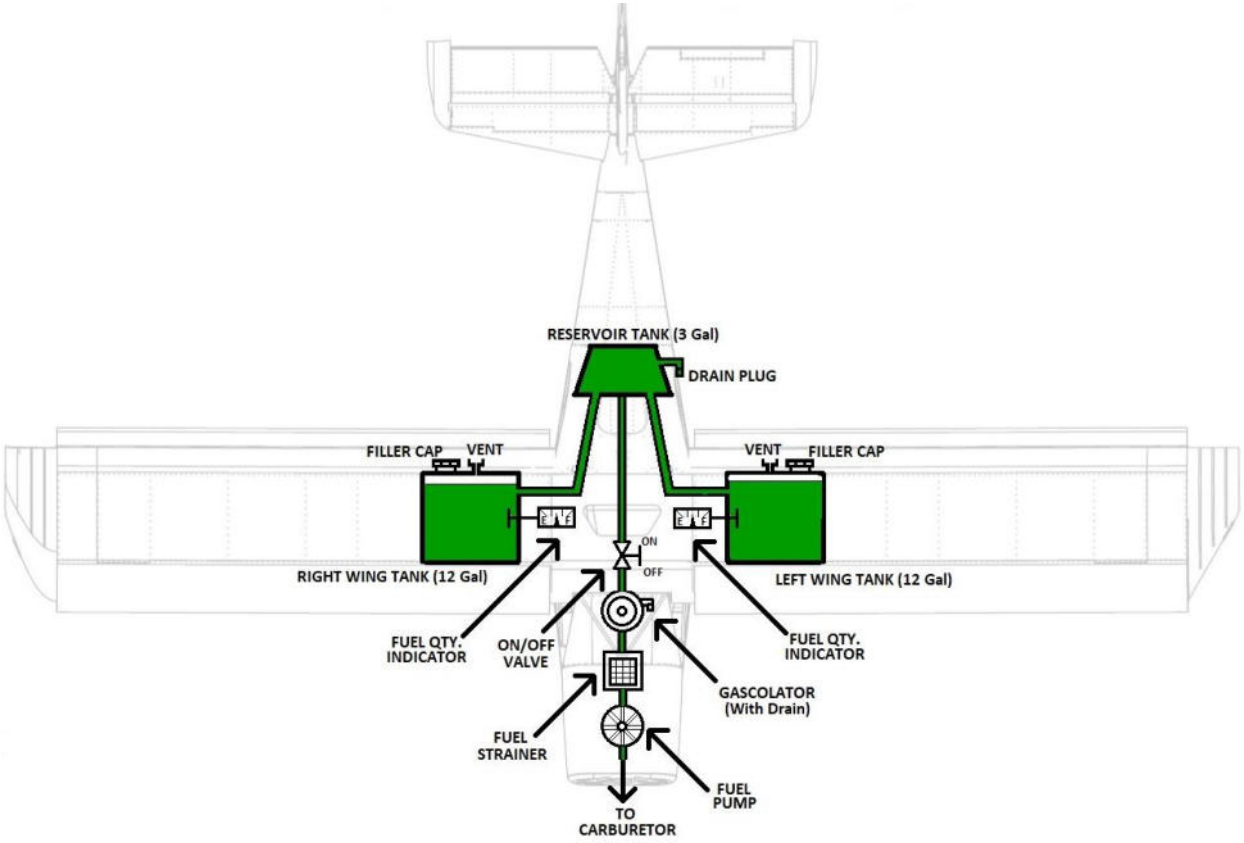

- ROTAX 912 ULS
- Four-stroke, opposed, four-cylinder engine.
- Cylinder heads cooled with fluid, cylinders cooled with air.
- Pressure lubrication.
- Dual magneto ignition.
- Propeller driven via reduction gear.
- Electric starter.
- Generator.
- 1 Throttle Lever Located on Center of Cabin.

7.9.2 Propeller

NOTE

Propeller May Vary (See Section 1.4.3)

7.9.3 Fuel System



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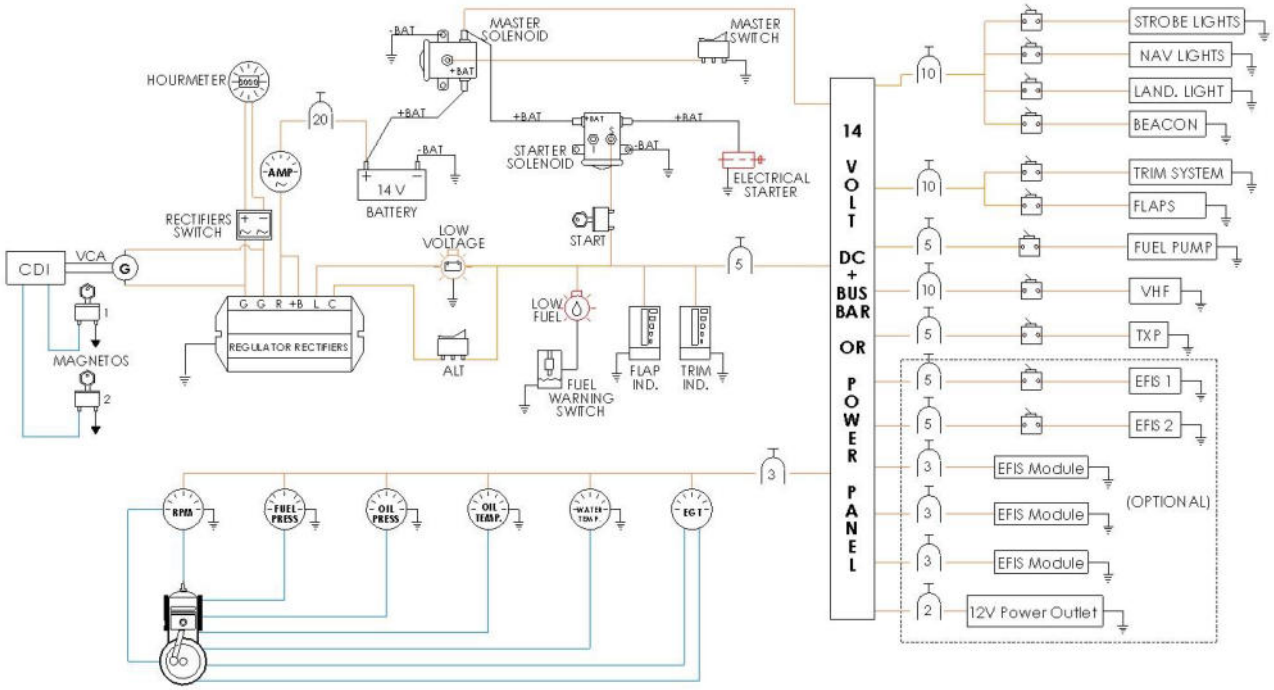
7.10 ELECTRICAL SYSTEM

The main electrical source is an alternator with 14V DC output and a nominal capacity of 22 A at an engine speed of 5400 RPM. In normal conditions, it charges the battery. The alternator starts to provide voltage output above 1800 RPM. The alternator and the battery are connected to the electrical bus in order to energize the electrical system.

The secondary DC source consists of a lead type battery which provides the required energy for feeding the essential electrical loads in the event of an alternator failure; likewise, the battery provides electrical energy for engine start.

Each electrical supply is connected to a circuit breaker. All electrical wires installed to the instrument panel comply with the MIL-C-27500 standards.



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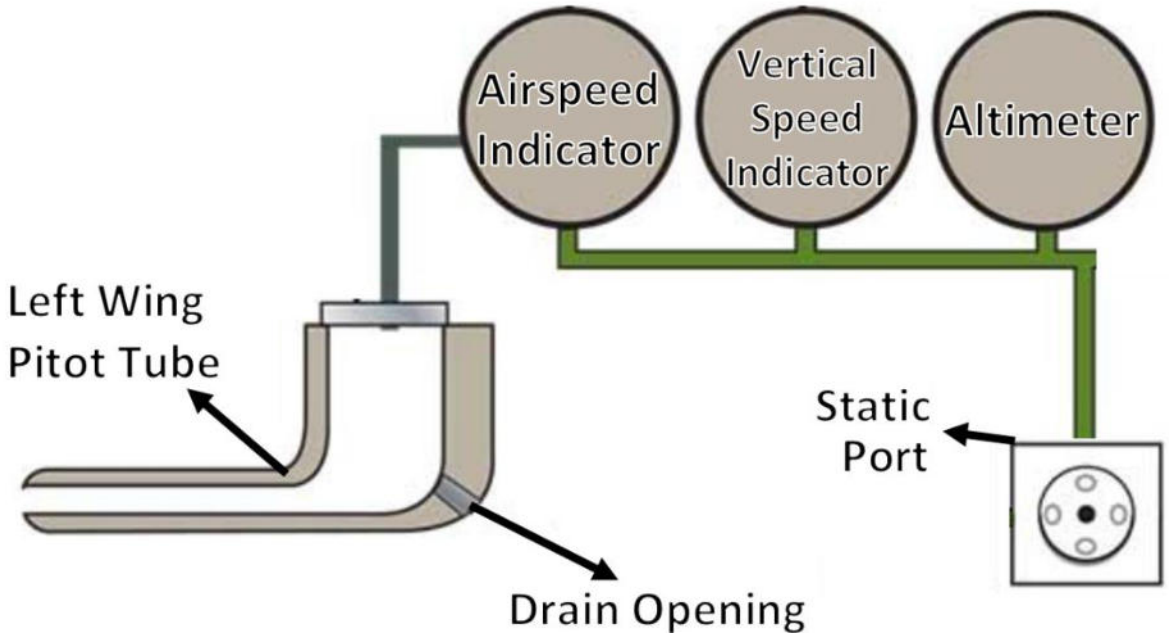
7.11 PITOT AND STATIC PRESSURE SYSTEMS

The aircraft features a conventional Pitot-Static system, consisting in a pitot tube located under left wing which receives impact air and a static port on either (left-right) side of the fuselage. The anemometric pressure difference sensing is send to Airspeed Indicator, Vertical Speed Indicator and Altimeter placed on panel (or to EFIS System if apply).



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7.12 AVIONICS

7.12.1 Communications

The aircraft is equipped as standard either with a panel-mounted 760 channel VHF transceiver MICROAIR M760 or with a VHF Radio ICOM – A220. (For detailed information regarding their operation, refers to their respective manufacturer's *Operation Manual*):

MICROAIR M760

ICOM A220

A Push-to-Talk Button used for communications, is placed on stick control:

7.12.2 Navigation

The main navigation item installed in the aircraft is a FALCON® vertical Card, non-liquid type compass*, positioned over the panel of instruments by means of a mounting Bracket:

Some Panel of instruments incorporated in the MXP 1000 Tayrona, include as an OPTION, a complete GARMIN Flight Display, which features standard GPS Navigation, ADAHRS, terrain/obstacles alerting, flight charts, etc. For detailed information refer to its corresponding GARMIN Operator's Manuals:

(OPTIONAL Electronic Flight Instrument System)

**Brand and Model of the Magnetic compass may vary depending upon manufacturer availability.*

SECTION 8 – HANDLING AND SERVICE

8.1 INTRODUCTION

This section contains factory-recommended procedures for proper ground handling and servicing of the aircraft. It also contains some requirements concerning inspections and basic maintenance, which are to be observed in order to maintain the performance and reliability of a new aircraft. It is wise to follow a planned schedule of lubrication and preventive maintenance based on climatic and flying conditions encountered.

8.2 SCHEDULED AIRCRAFT INSPECTIONS

The scope and the intervals of the inspection schedule are defined in the ***Doc.-No.MXP1000-MtceManual.***

Tasks to be carried out in relation to scheduled inspections of engine, propeller and equipment, are defined in the respective applicable manuals or operating and maintenance instructions.

NOTE

Stay in touch with the *WACSA S.A.S* factory or its distributors and benefit from their knowledge and experience. They know your aircraft and how to perform maintenance to it and will remind you when you need to have oil changes and lubrication and also of other periodic and seasonal services.

8.3 AIRCRAFT REPAIRS OR MODIFICATIONS

Any repair or modification of the aircraft design may only be performed by authorized personal.

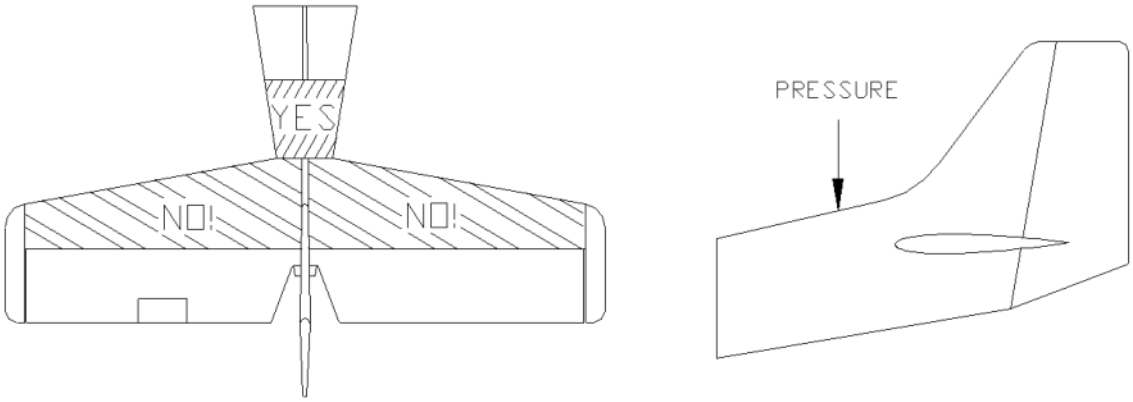
NOTE

Prior to any modification of the aircraft, ensure with the Civil Aviation Authority, that the intended modification will not negatively affect the airworthiness of the aircraft

After completing a modification, the aircraft should be re-weighed, and the respective weighing report sheet completed and the Weight and Balance schedule in Section 6.3 of this manual must be revised.

8.4 GROUND HANDLING

Proper handling and maintenance on the ground will help avoid costly repairs due to careless methods of aircraft movement on the ground. When aircraft is maneuvered by hand, push at the fuselage top longeron adjacent to the front edge of the stabilizer. Do not push downwards on the stabilizer's front edge.



8.4.1 Anchorage

A proper aircraft anchorage procedure is your best precaution in order to avoid damage to your parked aircraft due to heavy winds. Proceed in the following manner to anchor your plane safely:

1. Tie a rope or chain (able to withstand 700 lb.) to the wing tie-down fitting.
2. Secure the opposite end of the ropes or chains to a tie-down ring, properly anchored to the ground.
3. Tie rope or chain around the rear fuselage tie-down fitting and secure the other end to the ring anchored to the ground.
4. Tie control stick forward if control lock (optional equipment) is not available.

8.4.2 Storage

The entire metallic construction of your MXP 1000 TAYRONA makes outside storage practical. Interior storage of your aircraft will increase its durability the same way as it happens with a car.

If your aircraft must remain inactive for extended periods of time, cleaning is probably the most important consideration, whether your plane is in or out of a hangar. A small investment in cleaning will benefit you, since your plane will always look as good as new.

Dirt and mud have the same effect as salt, just at a lower level; do not ignore the engine when you store the plane.

Rotate it manually, or make it rotate regularly after a certain period of time, in order to keep bearings, cylinder walls and internal parts duly lubricated. Full tanks will help avoid condensation and will increase the useful life of the tank.

Aircrafts are constructed to be used on a regular basis and this regular use tends to keep them in good condition. An aircraft that is left parked and inactive for a very long period of time is liable to deteriorate faster than if it were flying on a regular basis and requires a careful check before it is put to service again.

8.5 GROUND SERVICING, CLEANING AND CARE

8.5.1 Aluminum Surfaces

Polyurethane lacquers and paints used in the construction of all types of planes by *WACSA S.A.S* require little maintenance to keep surfaces shiny, polished, clean and looking good. The aircraft can be washed with tap water to remove grime and with gasoline, carbon tetrachloride or other non-alkaline grease solvents, to remove oil and grease.

Home detergents clean well, but care must be taken when using them since some of them have a high alkaline content.

Since aluminum does not corrode if it is not exposed to moisture, we recommend maintaining these surfaces waxed in order to keep all moisture out. Use only wax and polishers that do not contain harsh or sandy abrasives and only those that maintain a neutral reaction. Opaque aluminum surfaces can be cleaned effectively with Bon Ami. A cleaning solution consists of two quarts of alcohol, two quarts of water and a pack of Bon Ami powder will be very effective, followed by a good wax job to maintain a shiny look.

8.5.2 Windshield and Windows

The windshield is a single piece of long-life polycarbonate plastic with high impact resistance. To clean the Plexiglas wash it with plenty of water and soap, using the palm of your hand to feel for and remove any type of built up dirt or mud. A soft rag, a sponge or a piece of cloth can be used but only as means to wet the plastic.

Dry with a clean and moist piece of cloth, because friction with a dry rag may generate an electrostatic charge on the plastic, attracting dust particles from the air. Drying with a moist piece of cloth will remove this charge as well as dust; therefore, we suggest performing this procedure.

Remove oil and grease by lightly rubbing with a rag soaked in kerosene or hair shampoo. Never use gasoline, alcohol, benzene, acetone, carbon tetrachloride, or antifreeze liquid, varnish, thinner or glass cleaner, since these items tend to soften plastic and thus cause cracks.

If you notice any scratches, after removing dirt and grease, the Plexiglas should be rubbed with high quality commercial wax. This wax will fill in minor scratches and help avoid future ones. Wax will be applied with a clean, dry soft piece of flannel, applying a light and even coat that will be lightly rub and polished.

8.5.3 Landing Gear

The landing gear consists of two plungers aluminum spring leaves, which replace shock struts, torque arms, springs, bearings, and used in conventional-type shock struts. This spring is made from the highest quality aluminum alloy (2024-T3) with great fatigue resistance. This spring requires no maintenance.

Correct tire air pressure is essential to realize the full benefits of the spring landing gear properties and obtain minimum tire wear. Correct tire pressure is 22 pounds per square inch (PSI) gauge pressure. Accumulation of oil and grease on tires will have an adverse effect on tire life and should be removed with soap and water.

8.5.4 Battery

The battery is located in the engine compartment, besides the firewall. Maintain the battery level at the top level mark by adding distilled water as required. Keep battery connections tight and clean, otherwise excessive voltage may be generated and damage other electrical equipment. Control of charging current and voltage is accomplished by the regulator-rectifier mounted on the firewall.

The aircraft should not normally be operated with the master switch in the "OFF" position, nor should it be operated without a battery, or with the battery disconnected, since this may lead to damage to the generator coils and the voltage regulator.

This recommendation should be overlooked during emergency situations.

8.5.5 Engine Compartment

The engine section should be kept free from any oil, grease or grime build up to avoid running the risk of starting a fire. The area between the cabin and the engine section is made of galvanized steel and can be cleaned with solvents recommended for grease and oil.

8.5.6 Propeller

Maintenance is required to keep your propeller in airworthy conditions. Periodically wiping off the propeller with an oily cloth will result in cleaning off grass and bug stains. Do not operate aircraft in heavy rain, since the wood propeller's body will damage gradually loosing efficiency.

8.6 INSPECTION AND MAINTENANCE SERVICE

Before you take delivery *WACSA S.A.S* or its distributors, make a thorough inspection of the MXP 1000 TAYRONA aircraft to make sure is ready for delivery. During the first few hours, distributors or the factory will make the necessary minor adjustments. All essential instructions will be transmitted to you by *WACSA S.A.S* distributors in your area.

WACSA S.A.S makes a special recommendation for the 100-hour inspection, procedure which has been carefully prepared by the factory, along with the authorized distributors. Upon completing this inspection, a complete inspection report will be delivered to the owner, detailing items requiring repair, along with the corresponding price quote.

Many distributors and mechanics have attended *WACSA S.A.S* schools and have received specialized training in the maintenance and care of *WACSA S.A.S* aircrafts.

WACSA S.A.S prepares service bulletins and letters as required. In this manner the aircraft will be permanently updated according to company specifications. Distributors have a wide range of genuine spare parts and specialized tools to repair and maintain the aircrafts.

NOTE

Shall there be any doubts or questions please contact us at:

info@wacsa-aero.com / mtedesco@aeroandina.com