

PiperSport

Pilot's Operating Handbook



Airplane Registration Number:

Airplane Serial Number: P1001085

PiperSport Distribution Inc.

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PiperSport

Pilot's Operating Handbook



PiperSport aircraft is designed and manufactured by



CZECH
SPORT AIRCRAFT

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LIST OF ABBREVIATIONS

ADI	Attitude direction indicator	
ALT	Altitude or Altimeter	
ATC	Air Traffic Control	
ASI	Airspeed Indicator	
bar	Pressure unit	(1 bar = 14.5037 psi)
BEACON	Anti-collision beacon	
°C	Temperature in degree of Celsius	(1°C = (°F - 32) / 1.8)
CAS	Calibrated Airspeed	
CDI	Course deviation indicator	
CHT	Cylinder head temperature	
COMM	Communication transceiver	
EFIS	Electronic Flight Instrument System	
ELT	Emergency Locator Transmitter	
EMS	Engine Monitoring System	
°F	Temperature in degree of Fahrenheit	(1°F = (°C x 1.8) + 32)
ft	Foot or feet	(1 ft = 12 in = 0.305 m = 305 mm)
fpm	Vertical speed in feet per minute	(1 fpm = 0.0051 m/s)
GPS	Global Positioning System	
hp	Power unit	(1 hp = 0.7457 kW)
IAS	Indicated Airspeed	
IC	Intercom	
IFR	Instrument Flight Rules	
in	Inch	(1 in = 25.4 mm)
ISA	International Standard Atmosphere	
KCAS	Calibrated Airspeed in Knots	
kg	Kilogram	(1 kg = 2.205 lb)
KIAS	Indicated Airspeed in Knots	
km	kilometer	(1 km = 1000 m = 0.54 NM = 0.621 SM)
km/h	Speed in kilometers per hour	(1 km/h = 0.54 knots = 0.621 mph = 0.278 m/s)
knot	Speed in NM per hour	(1 knot = 1.151 mph = 1.852 km/h = 0.514 m/s)
kW	Power unit	(1 kW = 1.341 hp)
l	Liter	(1 l = 0.22 UK gal = 0.264 US gal)
lb	Pound	(1 lb = 0.454 kg)
lbf	Force unit	(1 lbf = 4.448 N)
m	Meter	(1 m = 1000 mm = 3.28 ft = 39.37 in)
mm	Millimeter	(1 mm = 0.03937 in)
MAC	Mean Aerodynamic Chord	
max.	Maximum	
min.	Minimum or minute	
mph	Speed in statute miles per hour	(1 mph = 0.87 knots = 1.61 km/h)
m/s	Speed in meters per second	(1 m/s = 196.8 fpm = 1.944 knots = 3.6 km/h)

N	Newton - force unit	(1 N = 0.225 lbf)
NM	Nautical mile	(1 NM = 1,852 m)
OFF	System is switched off or control element is in off-position	
ON	System is switched on or control element is in on-position	
OAT	Outside Air Temperature	
POH	Pilot Operating Handbook	
psi	Pressure unit - pound per square inch	(1psi = 0.0689bar)
rpm	Revolutions per minute	
s or sec	Second	
SM	Statute Mile	(1SM = 1,609 m)
US gal	US gallon	(1 US gal = 0.83 UK gal = 3.785 l)
V	Volt	
VFR	Visual Flight Rules	
VMC	Visual Meteorological Conditions	
VSI	Vertical Speed Indicator	
VTU	Vertical tail unit	
V _A	Maneuvering airspeed	
V _{FE}	Maximum flap extended speed	
V _{NE}	Never exceed speed	
V _{NO}	Maximum designed cruising speed	
V _{SO}	Stall speed with wing flaps in extended position	
V _{S1}	Stall speed with wing flaps in retracted position	
V _X	Best angle of climb speed	
V _Y	Best rate of climb speed	

ASTM STANDARDS

The PiperSport aircraft is designed and built according to following ASTM LSA standards:

ASTM F 2245 – 09

Standard Specification for Design and performance of a Light Sport Airplane

ASTM F 2279 – 10

Standard Practice for Quality Assurance in Manufacture of Fixed Wing Light Sport Aircraft

ASTM F 2295 – 10

Standard Practice for Continued Operational Safety Monitoring of a Light Sport Aircraft

ASTM F 2316 – 08

Standard Specification for Airframe Emergency Parachutes for Light Sport Aircraft

ASTM F 2746 – 09

Standard Specification for Pilot's Operating Handbook (POH) for Light Sport Airplane

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PiperSport Distribution Inc.

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SECTION 1

TABLE OF CONTENTS

1. GENERAL INFORMATION

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1. GENERAL INFORMATION

This Pilot Operating Handbook has been prepared to provide pilots with information for the safe and efficient operation of the *PiperSport* aircraft and contains 9 sections. It also contains supplementary information considered to be important by the aircraft manufacturer. The Aircraft Flight Training Supplement is a part of this handbook too.

Date of issue is written in the yy/mm/dd format.

NOTE

All airspeeds shown in the POH are IAS, except if shown otherwise.

Warnings, Cautions and Notes

The following definitions apply to warnings, cautions and notes in the Pilot's Operating Handbook.

WARNING

Means that the non-observation of the corresponding procedure leads to an immediate or important degradation of the flight safety i.e. to injury or death of persons.

CAUTION

Means that the non-observation of the corresponding procedure leads to a minor or possible long term degradation of the flight safety.

NOTE

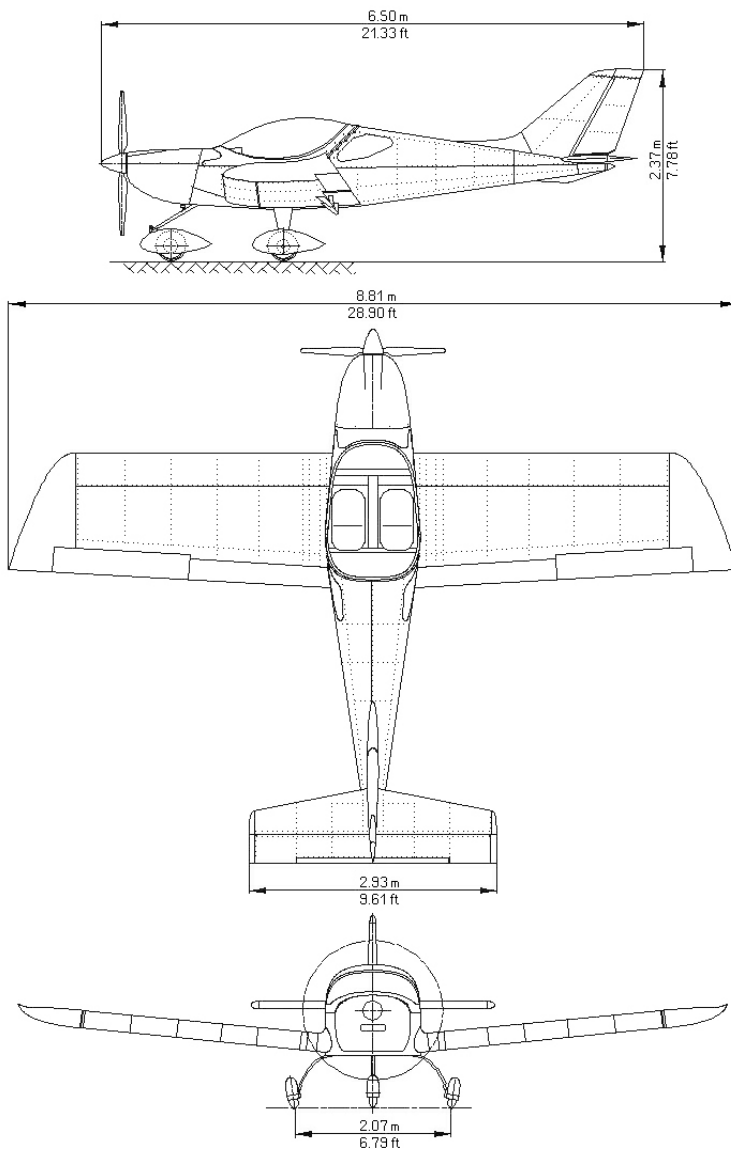
Draws attention to any special item not directly related to safety but which is important or unusual.

1.1 Airplane specification

PiperSport is the airplane intended especially for recreational and cross-country flying, and non-aerobatics operation.

PiperSport is a single-engine, all metal, low-wing monoplane of semi-monocoque structure with two side-by-side seats. The airplane is equipped with a fixed tricycle undercarriage with castoring nose wheel.

Aircraft layout:



Main airplane dimensions:

Wing span.....	8.81 [m]	(28.90 [ft])
Length.....	6.50 [m]	(21.33 [ft])
Height	2.37 [m]	(7.78 [ft])
Wing area	12.3 [m ²]	(132.3 [sq ft])
Wing loading.....	49 [kg/m ²]	(10 [lb/sq ft])
Cockpit width	1.17 [m]	(46 [in])

Flight control surfaces travel:

Rudder.....	30° to each side
Elevator	+ 28°/- 25°
Aileron	+ 20°/- 15°
Flaps.....	0° to 30°
Aileron trim	+ 20°/- 20°
Elevator trim	+ 22°/- 28°

Engine:

Manufacturer	BRP-Rotax GmbH&Co.KG
Model number.....	912ULS
Maximum horsepower rating.....	73.5 kW (98.6 hp) at 5,800 RPM
Cooling	liquid and air
Type	4-stroke, 4 cylinder, horizontally opposed, spark ignition engine with one central camshaft-push-rod-OHV

Propeller:

Manufacturer	WOODCOMP s.r.o.
Model number.....	KLASSIC 170/3/R
Number of blades	3
Diameter.....	1,720 [mm] (68 [in])
Pitch setting.....	17.5 ± 0.5°
Type	three composite blades, ground adjustable

1.2 Summary of performances

Weights:

Max. takeoff and landing weight	600 [kg]	(1,320 [lb])
Max. weight of fuel.....	82 [kg]	(180 [lb])
Max. baggage weight in rear fuselage	18 [kg]	(40 [lb])
Max. baggage weight in each wing locker	20 [kg]	(44 [lb])
Empty weight (minimum equipment).....	345 [kg]	(760 [lb])

NOTE

Actual empty weight is shown in Section 9, Supplement No. 02

Wing loading.....	49 [kg/m ²]	(10 [lb/sq ft])
Power loading.....	8.15 [kg/kW]	(13.39 [lb/hp])

Speeds:

Maximum at sea level.....	119 [knot]	(220 [km/h])
Cruise, 75% power at 3,000 ft	93 [knot]	(172 [km/h])

Range and endurance:

Range.....	516 [NM]	(953 [km])
Endurance	5:25 [h:mm]	

Conditions:

Usable fuel.....	113 [liter]	(29.85 [US gal])
75% power of engine.....	5,000 RPM	
Altitude.....	3,000 [ft]	
Reserve	30 minutes	

Rate of climb:

At sea level	825 [fpm]	(4.2 [m/s])
Best angle of climb speed (v_x)	56 [knot]	(104 [km/h])
Best rate of climb speed (v_y)	62 [knot]	(115 [km/h])

Stall speeds:

V_{S0} – flaps down, power - idle	32 [knot]	(59 [km/h])
V_{S1} – flaps up, power - idle	39 [knot]	(72 [km/h])

Fuel:

Total fuel capacity	114 [liter]	(30.12 [US gal])
Total usable fuel	113 [liter]	(29.85 [US gal])
Approved types of fuel	see chapter 2.11	

Engine power:

Maximum power at 5,800 RPM	73.5 [kW]	(98.6 [hp])
Max. continuous power at 5,500 RPM	69 [kW]	(92.5 [hp])

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2. LIMITATIONS

CAUTION

Airspeeds values are valid for standard AVIATIK WA037383 pitot-static probe.

2.1 Airspeed indicator range markings

NOTE

The stated stall speeds are valid for all flight altitudes.

Marking	IAS value or range		Significance
	<i>knot</i>	<i>km/h</i>	
White arc	32-75	59-139	Flap Operating Range.
Green arc	39-108	72-200	Normal Operating Range.
Yellow arc	108-138	200-255	Maneuvers must be conducted with caution and only in smooth air.
Red line	138	255	Maximum speed for all operations.

2.2 Stalling speeds at maximum takeoff weight

Conditions: Weight: MTOW Engine: idle	Wing flaps pos.	IAS		CAS		Altitude loss at recovery	
		<i>knot</i>	<i>km/h</i>	<i>knot</i>	<i>km/h</i>	<i>ft</i>	<i>m</i>
Wing level stall	0°	39	72	43	80	65	20
	15°	35	65	39	72	49	15
	30°	32	59	37	69	33	10
Coordinated turn 30° bank	0°	42	78	46	85	82	25
	15°	38	70	42	78	66	20
	30°	35	65	39	72	49	15

2.3 Flap extended speed range - V_{S0} to V_{FE}

Flap operating range (IAS):

32 - 75 [knot] (59 - 139 [km/h])

2.4 Maneuvering speed - V_A

Maneuvering speed (IAS) at 600 [kg] (1,320 [lb]):

88 [knot] (163 [km/h])

Maneuvering speed (IAS) at 408 [kg] (900 [lb]):

70 [knot] (130 [km/h])

2.5 Maximum structural cruising speed - V_{NO}

Maximum structural cruising speed (IAS):

108 [knot] (200 [km/h])

2.6 Never exceed speed - V_{NE}

Never exceed speed (IAS):

138 [knot] (255 [km/h])

2.7 Service ceiling

Service ceiling..... 14,378 [ft] (4,382 [m])

2.8 Load factors

Maximum positive limit load factor + 4 g

Maximum negative limit load factor..... - 2 g

2.9 Approved maneuvers

The *PiperSport* is approved for normal and below listed maneuvers:

- Steep turns not exceeding 60° bank
- Lazy eights
- Chandelles
- Stalls (except whip stalls)

2.10 Operating weights and loading

Max. takeoff weight.....	600 [kg]	(1,320 [lb])
Max landing weight.....	600 [kg]	(1,320 [lb])
Max. weight of fuel.....	82 [kg]	(180 [lb])
Max. baggage weight in rear fuselage.....	18 [kg]	(40 [lb])
Max. baggage weight in each wing locker	20 [kg]	(44 [lb])
Empty weight (minimum equipment).....	345 [kg]	(760 [lb])

NOTE

Actual empty weight is shown in Section 9, Supplement No. 02

WARNING

Do not exceed maximum takeoff weight 600 [kg] (1,320 [lb]) !

Number of seats	2	
Minimum crew	1 pilot on the left seat	
Minimum crew weight	43 [kg]	(95 [lb])
Maximum crew weight on each seat.....	115 [kg]	(253 [lb])

2.11 Fuel

Fuel volume:

Wing fuel tanks capacity.....	2x57 [liter]	(2x15.06 [US gal])
Total fuel capacity.....	114 [liter]	(30.12 [US gal])
Unusable fuel.....	2x0.5 [liter]	(2x0.13 [US gal])
Total usable fuel	113 [liter]	(29.85 [US gal])

Recommended fuel type:

*(Refer to the ROTAX Operator's manual section 10.2.2 Fuel,
Rotax Service Instruction SI-912-016)*

MOGAS

European standard	- min. RON 95, EN 228 Super, EN 228 Super plus
US standard	- ASTM D4814
Canadian standard	- min. AKI 91, CAN/CGSB-3.5 Quality 3

CAUTION

Fuels that contain more than 5% ethanol blend have not been tested and are not permitted for use.

AVGAS

US standard	- AVGAS 100 LL (ASTM D910)
-------------	----------------------------

AVGAS 100 LL 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 it should only be used in case of problems with vapor lock or when other types of gasoline are unavailable.

2.12 Engine operating speeds and limits

Engine Model:		ROTAX 912 ULS
Engine Manufacturer:		Bombardier-Rotax GMBH
Power	Max. takeoff:	73.5 kW (98.6 hp) at 5,800 rpm (max. 5 min.)
	Max. continuous:	69 kW (92.5 hp) at 5,500 rpm
	Cruising (75%):	51 kW (68.4 hp) at 5,000 rpm
Engine RPM	Max. takeoff:	5,800 rpm (max. 5 min.)
	Max. continuous:	5,500 rpm
	Cruising (75%):	5,000 rpm
	Idling:	1,400 rpm (minimum)
Oil pressure	Minimum:	0.8 bar (12 psi) below 3,500 rpm
	Maximum:	7 bar (102 psi) cold engine starting
	Optimum:	2 - 5 bar (29 - 73 psi) above 3,500 rpm
Oil temperature	Minimum:	50° C (122° F)
	Maximum:	130° C (266° F)
	Optimum:	90 - 110° C (194 - 230° F)
Cylinder head temper. (CHT)	Minimum:	50° C (122° F)
	Maximum:	135° C (275° F) *
Exhaust gas temperature (EGT)	Nominal:	800° C (1,472° F)
	Maximum:	850° C (1,562° F)
	Max. takeoff:	880° C (1,616° F)
Fuel press.	Minimum:	0.15 bar (2.2 psi)
	Maximum:	0.4 bar (5.8 psi)

* See the Rotax Operator's manual section 10.1.2 Operating speeds and limits and section 10.2.1 Coolant, Rotax Installation manual section 12 Cooling system, Rotax Service Instruction SI-912-016, POH Section 8, paragraph 8.5.3 Coolant and Section 9, Supplement No. 02. Type of coolant used in engine.

2.13 Engine instruments markings

Rotax 912ULS 73.5 [kW] (98.6 [hp])	Minimum Limit (red line)	Caution Range (yellow arc)	Normal Operating Range (green arc)	Caution Range (yellow arc)	Maximum Range (red line)
Engine speed [RPM]	-	0-1,400	1,400-5,500	5,500-5,800	5,800
Oil Pressure	0.8 bar (12 psi)	0.8-2 bar (12-29 psi)	2-5 bar (29-73 psi)	5-7 bar (73-102 psi)	7 bar (102 psi)
Oil Temperature	50°C (122°F)	50-90°C (122-194°F)	90-110°C (194-230°F)	110-130°C (230-266°F)	130°C (266°F)
Cylinder head Temperature (CHT)	-	-	50-135°C (122-275°F)	-	135°C (275°F)
Fuel Pressure	0.15 bar (2.2 psi)	-	0.15-0.4 bar (2.2-5.8 psi)	-	0.4 bar (5.8 psi)
Manifold Pressure	-	-	10-29 inHg	-	29 inHg

2.14 Other limitations

- **No smoking on board of the aircraft!**
- **Approved for Day VFR flights only.**
- **Flight in rain**

When flying in the rain, no additional steps are required. Aircraft qualities and performance are not substantially changed. However **VMC must be maintained !**

- **Minimum instruments and equipment list for Day VFR flights:**
 - Airspeed indicator
 - Altimeter
 - Compass (is not required by ASTM F 2245)
 - Fuel quantity indicator
 - Tachometer (RPM)
 - Engine instruments as required by the engine manufacturer :
 - Oil temperature indicator
 - Oil pressure indicator
 - Cylinder head temperature indicator
 - Safety harness for every used seat

WARNING

IFR FLIGHTS AND INTENTIONAL FLIGHTS UNDER ICING CONDITIONS ARE PROHIBITED!

WARNING

EMERGENCY PARACHUTE APPROVED FOR UP TO MTOW 612 KG (1,350 LBS) AND MAX. VELOCITY 120 KNOTS (222 KM/H)!

WARNING

MINIMUM 6 LITRES (1.58 US GAL) OF FUEL QUANTITY ALLOWS APPROXIMATELY 15 MINUTES OF SAFE OPERATION!

CAUTION

Install air intake shields in front of water and oil cooler, if ambient air temperature is 0°C (32°F) or lower.

2.15 Limitation placards and markings

Operating limitation on instrument panel

AIRSPEEDS:	
V_{NE}	138 kts
V_A	88 kts
V_{FE}	75 kts
V_{SO}	32 kts

WARNING !
DO NOT EXCEED MAXIMUM
TAKEOFF WEIGHT: 600kg/1320lbs

WARNING !
IFR FLIGHTS AND INTENTIONAL FLIGHTS
UNDER ICING CONDITIONS ARE PROHIBITED

Operating limitation in baggage space

MAX. BAGGAGE WEIGHT: 18kg/40lbs

MAX. WEIGHT IN WING LOCKER: 20kg/44lbs

Passenger warning

THIS AIRCRAFT WAS MANUFACTURED IN ACCORDANCE WITH LIGHT SPORT AIRCRAFT AIRWORTHINESS STANDARDS AND DOES NOT CONFORM TO STANDARD CATEGORY AIRWORTHINESS REQUIREMENTS.

Prohibited maneuvers

**NO INTENTIONAL SPINS !
AEROBATICS PROHIBITED !**

2.16 Miscellaneous placards and markings

**PILOT
HEADSET**

**FUEL CAPACITY:
57 Litres/15 US Gal.
MOGAS RON 95/AKI 91
AVGAS 100 LL**

**MUSIC IN
COPILOT
HEADSET**

FUEL DRAIN ↘

**AEROSHELL OIL
SPORT PLUS 4**

**↑ C
O L
P O
E S
N E
↓**

**↑ MAX
POWER
↓ IDLE**

**↑ OFF
CHOKE
↓ ON**

**FLAPS
UP**

**FLAPS
DOWN**

PEDAL SETTING ↘

✓ PEDAL SETTING

CANOPY OPENED

CANOPY CLOSED

BAGGAGE COMPARTMENT - A

BAGGAGE COMPARTMENT - B

NO STEP

NO PUSH

If BRS rescue system is installed:



- located on the both sides of fuselage
between canopy and rear window

This aircraft is equipped with
a ballistically-deployed
emergency parachute system



- located in place rocket egress

Rocket Deployed Parachute Egress Area
STAY CLEAR
Emergency information at: www.BRSparachutes.com
or call (651)457-7491 – after hours & weekends call (763) 226-6110

CAUTION

The owner (operator) of this airplane is responsible for the readability of placards during the aircraft service life.

SECTION 3

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3. EMERGENCY PROCEDURES

3.1 General information

This section provides checklists and amplified procedures for coping with various emergencies that may occur. Emergencies caused by aircraft or engine malfunction are extremely rare if proper pre-flight inspections and maintenance are practiced.

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

CAUTION

*Airspeeds values are valid for standard AVIATIK WA037383 pitot-static probe.
These emergency procedures are valid for WOODCOMP KLASSIC 170/3/R three composite blades ground adjustable propeller.*

3.2 Airspeeds for Emergency procedures

Engine failure after takeoff.....	60 [knot] (110 [km/h])
(flaps in T/O or retracted position)	
Maneuvering speed at 600 [kg] (1,320 [lb])	88 [knot] (163 [km/h])
Maneuvering speed at 408 [kg] (900 [lb])	70 [knot] (130 [km/h])
(flaps retracted)	
Gliding speed.....	60 [knot] (110 [km/h])
(flaps retracted)	
Precautionary landing with engine power	60 [knot] (110 [km/h])
(flaps in any position)	
Emergency landing without engine power	60 [knot] (110 [km/h])
(flaps in any position)	

3.3 Engine failure during takeoff run

1. Throttle - idle
2. Ignition switch - switch OFF
3. Brakes - apply

3.4 Engine failure after takeoff

1. Push control stick forward
2. Speed - gliding at 60 [knot] (110 [km/h])
3. Altitude - below 150 [ft] (50[m]) : land in takeoff direction
- over 150 [ft] (50[m]) : choose a landing area
4. Landing area - choose free area without obstacles
5. Wind - find direction and velocity
6. Flaps - extend as necessary
7. Trim - adjust
8. Safety harness - fasten
9. Fuel Selector - close
10. Ignition switch - switch OFF
11. Master switch - switch OFF before landing
12. Land

3.5 Loss of engine power in flight

1. Push control stick forward
2. Speed - gliding at 60 [knot] (110 [km/h])
3. Altitude - in accordance with actual altitude search for a suitable place to safe land
4. Landing area - choose free area without obstacles
5. Wind - find direction and velocity
6. Emergency landing - perform according to 3.7

3.6 In-flight engine starting

1. Switches - switch OFF unnecessary electrical equipment
2. Master switch - switch ON
3. Fuel Selector - turn on (*to tank with more quantity of fuel*)
4. Throttle - idle
5. Fuel pump - switch ON
6. Ignition switch - hold activated to start the engine
7. After engine starting - fuel pump - switch OFF
- other switches - switch ON as necessary

3.7 Emergency landing without engine power

Emergency landings are generally carried out in the case of engine failure and the engine cannot be re-started.

1. Speed - adjust for optimum gliding
60 [knot] (110 [km/h])
2. Trim - adjust
3. COMM - giving location and intentions - if possible
4. Flaps - extend as necessary
5. Fuel Selector - close
6. Ignition switch - switch OFF
7. Master switch - switch OFF
8. Safety harness - fasten
9. Perform approach without steep turns and land on chosen landing area

3.8 Precautionary landing with engine power

A precautionary landing is generally carried out in the cases where the pilot may be disorientated, the aircraft has no fuel reserve or possibly in bad weather conditions.

1. Choose landing area, determine wind direction
2. Report your intention to land and landing area location if a COMM is installed in the airplane

3. Perform low-altitude passage into wind over the right-hand side of the chosen area with flaps extended as needed and thoroughly inspect the landing area
4. Perform circle pattern
5. Perform approach at increased idling with flaps fully extended at *60 [knot] (110 [km/h])*
6. Reduce power to idle when flying over the runway threshold and touch-down at the very beginning of the chosen area
7. After stopping the airplane switch OFF all switches, shut OFF the fuel selector, lock the airplane and seek assistance

NOTE

Watch the chosen area steadily during precautionary landing.

3.9 Engine fire during start

1. Fuel Selector - close
2. Throttle - full power
3. Ignition switch - switch OFF
4. Master - switch OFF
5. Leave the airplane
6. Extinguish fire by yourself or call for a fire-brigade if you cannot do it

3.10 Engine fire in flight

1. Heating - close
2. Fuel Selector - close
3. Throttle - full power
4. Ignition switch - switch OFF after the fuel in carburetors is consumed and engine shut down
5. Master switch - switch OFF
6. Emergency landing - perform according to 3.7 as soon as possible
7. Leave the airplane
8. Extinguish fire by yourself or call for a fire-brigade if you cannot do it

NOTE

Estimated time to pump fuel out of carburetors is about 30 [sec].

WARNING

Do not attempt to re-start the engine!

3.11 Electrical fire in flight

1. Master switch - switch OFF
2. Other switches - switch OFF
3. Heating - close
4. Ventilation - open
5. Use the fire extinguisher (*if installed*)
6. Emergency landing - perform according to 3.7 as soon as possible

3.12 Generator failure

- GEN "OFF" highlighted red and blinking, bringing up the alarm bar at the bottom of the EMS screen with message, triggering the external EMS warning light and audio alert
 - Voltmeter (on EMS screen) indicates voltage under 12.5 V.
 - Ammeter (on EMS screen) permanently indicates negative current independently on engine RPM.
1. Engine RPM - increase above 3000 RPM
If the above generator failure indication persists:
 2. Switch OFF - all unnecessary electrical equipment
 3. Switch ON - Master, Instruments and Avionics
 4. Voltmeter - monitor voltage
 5. Land as soon as possible at nearest suitable airport

CAUTION

*Use transceiver, transponder and GPS as necessary, short time only.
Operating time of battery in good condition is up to 15 minutes.
The engine runs independently on generator functioning.*

3.13 Inadvertent spin recovery

There is no uncontrollable tendency of the airplane to enter into a spin provided the normal piloting techniques are used.

Inadvertent spin recovery technique:

1. Throttle - idle
2. Lateral control - ailerons neutralized
3. Rudder pedals - full opposite rudder
4. Rudder pedals - neutralize rudder immediately when rotation stops
5. Longitudinal control - neutralizes or push forward and recovery dive

WARNING

INTENTIONAL SPINS ARE PROHIBITED!

3.14 Inadvertent icing encounter

CAUTION

Aircraft is approved to operate in VMC condition only!

1. Leave icing area turn back or change altitude to reach area with higher outside air temperature
2. Carburetor heating open
3. Cabin heating open
4. Increase RPM to minimize ice build-up on propeller blades
5. Continue to move control surfaces to maintain their moveability
6. In case of icing on the leading edge of wing, the stall speed will increase
7. In case of icing on the pitot probe, erroneous indicating of the airspeed and altimeter
8. If you fail to recover the engine power or normal flight conditions, land on the nearest airfield (*if possible*) or depending on the circumstances, perform a precautionary landing according to 3.8 or emergency landing according to 3.7

NOTE

The carburetor icing and air filter icing shows itself through a decrease in engine power and an increase of engine temperatures.

NOTE

Use carburetor heating during lengthy descents and in areas of possible carburetor icing.

3.15 Obstruction of air into engine filter

If the engine runs rough and power decrease, air filter can be clogged with some impurities e.g. dust or ice.

Perform:

1. Carburetor heating - open
2. Check engine running and monitor engine instruments.
3. Land as soon as possible at nearest suitable airport.

If you fail to recover the engine power, land on the nearest airfield (*if possible*) or depending on the circumstances, perform a precautionary landing according to 3.8.

3.16 Engine vibration

If any forced aircraft vibrations appear, it is necessary:

1. To set engine speed to such power rating where the vibrations are lowest
2. To land on the nearest airfield or to perform a precautionary landing according to 3.8

3.17 Landing with a flat tire

1. During landing keep the damaged wheel above ground as long as possible using the ailerons control
2. Maintain the direction on the landing roll out, applying rudder control

3.18 Landing with a defective landing gear

1. If the main landing gear is damaged, perform touch-down at the lowest practicable speed and if possible, maintain direction during landing run
2. If the nose wheel is damaged perform touch-down at the lowest practicable speed and hold the nose wheel above the ground by means of the elevator control as long as possible

3.19 Inadvertent canopy opening during takeoff

- During takeoff – aircraft rotation occurs, the canopy opens approximately 50 mm (2 in).
- During climb and descent with airspeed at 60-75 knots (110-139 km/h), the canopy stays opened 50-80 mm (2-3.2 in).
- During horizontal flight with airspeed at 60-80 knots (110-148 km/h), the canopy stays opened 50-80 mm (2-3.2 in).
- In all above-mentioned cases – there are no flight problems, no vibrations, good aircraft control, and no change of flight characteristics.
- **It is not possible to close the canopy.**

Recommended procedure if the canopy opens during takeoff:

1. **DO NOT TRY TO CLOSE THE CANOPY!**
2. Continue the takeoff
3. Climb to the safe altitude
 - maintain airspeed at 65 knot (120 km/h)
4. Continue to fly the normal traffic pattern (circuit)
 - max. airspeed 75 knot (139 km/h)
5. Land
 - after stopping, close and lock the canopy

Recommendation: - ***Before takeoff, manually check the canopy is locked by pushing on the canopy upwards.***

CAUTION

During the flight, approach and landing - do not perform any slipping.

3.20 List of EMS alert alarms

HIGH RPM ALARM
HIGH MANIFOLD PRESSURE ALARM
HIGH OIL PRESSURE ALARM
LOW OIL PRESSURE ALARM
HIGH OIL TEMPERATURE ALARM
LOW OIL TEMPERATURE ALARM
HIGH EGT 1 / 2 ALARM
LOW EGT 1 / 2 ALARM
HIGH CHT 1 / 2 ALARM
LOW CHT 1 / 2 ALARM
LOW L / R FUEL TANK ALARM
HIGH FUEL PRESSURE ALARM
LOW FUEL PRESSURE ALARM
HIGH VOLTAGE ALARM
LOW VOLTAGE ALARM
HIGH CURRENT ALARM
LOW CURRENT ALARM

SECTION 4

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4. NORMAL PROCEDURES

This section provides checklists and recommended procedures for normal operation of the aircraft.

CAUTION

Airspeeds values are valid for standard **AVIATIK WA037383 pitot-static probe**.

These normal procedures are valid for standard **WOODCOMP KLASSIC 170/3/R** three composite blades ground adjustable propeller.

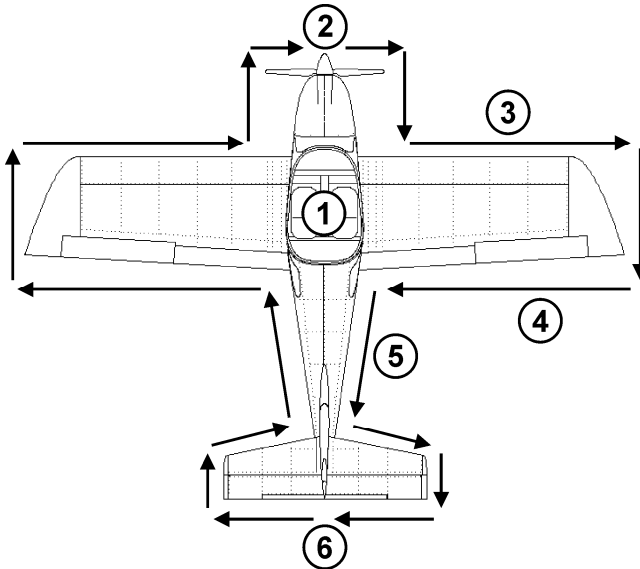
4.1 Preflight check

Carry out the pre-flight inspection every day prior to the first flight or after airplane assembly. Incomplete or careless inspection can cause an accident. Carry out the inspection following the instructions in the Inspection Check List.

NOTE

The word "condition" in the instructions means a visual inspection of surface for damage deformations, scratching, chafing, corrosion or other damages, which may lead to flight safety degradation.

The manufacturer recommends carrying out the pre-flight inspection as follows:



Inspection Check List

①	<ul style="list-style-type: none"> - Ignition - OFF - Master switch - ON - Instruments switch - ON, check fuel quantity on indicators - Avionics - check condition - Control system - visual inspection, function, clearance, free movement up to stops - check wing flaps operation - check trims operation - Master and Instr. switches - OFF - Canopy - condition of attachment, cleanness - Check cockpit for loose objects
②	<ul style="list-style-type: none"> - Engine cowling condition - Propeller and spinner condition - Engine mount and exhaust manifold condition - Oil quantity check <ul style="list-style-type: none"> - before this check, ensure Ignition OFF, then turn the propeller by hand in direction of engine rotation several times to pump oil from the engine into the oil tank (see the Rotax Operator's manual section 10.3.3) - Coolant quantity check - Visual inspection of the fuel and electrical system - Fuel system draining - Other actions according to the engine manual
③	<ul style="list-style-type: none"> - Wing surface condition - Leading edge condition - Pitot head condition
④	<ul style="list-style-type: none"> - Wing tip - surface condition, attachment - Aileron - surface condition, attachment, clearance, free movement - Wing flap - surface condition, attachment, clearance
⑤	<ul style="list-style-type: none"> - Landing gear - wheel attachment, brakes, condition and pressure of tires - Wing lower surface and fuselage bottom condition
⑥	<ul style="list-style-type: none"> - Vertical tail unit - condition of surface, attachment, free movement, rudder stops - Horizontal tail unit - condition of surface, attachment, free movement, elevator stops
	<ul style="list-style-type: none"> - Check that left side the fuselage and wing is the same as right side.

WARNING

Physically check the fuel level before each takeoff to make sure you have sufficient fuel for the planned flight.

WARNING

In case of long-term parking it is recommended to turn the engine several times (Ignition OFF!) by turning the propeller. Always handle by palm the blade area i.e. do not grasp only the blade edge. It will facilitate engine starting.

4.2 Engine starting

4.2.1 Before engine starting

1. Control system - free & correct movement
2. Canopy - clean, closed and locked
3. Safety harness - fasten
4. Brakes - fully applied

4.2.2 Engine starting

NOTE: Start the engine according to procedure in Rotax Operator's manual.

1. Throttle - idle
2. Choke - cold engine - ON (fully pulled and hold)
- warm engine - OFF
3. Fuel selector - turn on (left or right fuel tank in accordance with fuel tanks filling)
4. Master switch - switch ON
5. Fuel pump - switch ON
6. Propeller area - clear
7. Ignition switch - hold activated to start the engine
8. After engine starting - Instrument - switch ON
- Fuel pump - switch OFF
- Avionics - switch ON
- other switches - switch ON as necessary
9. Choke - gradually release during engine warming up
10. Throttle - maintain max. 2,500 [rpm] for warming up

CAUTION

- *The starter should be activated for a maximum of 10 [sec], followed by 2 [min] pause for starter cooling.*
- *As soon as engine runs, adjust throttle to achieve smooth running at approx. 2,500 [rpm]. Check the oil pressure, which should increase within 10 [sec]. Increase the engine speed after the oil pressure has reached 2 [bar] (29 [psi]) and is steady.*
- *To avoid shock loading, start the engine with the throttle lever set for idling or 10 % open at maximum, then wait 3 [sec] to reach constant engine speed before new acceleration.*
- *Only one magneto should be switched ON (OFF) during ignition magneto check.*

4.2.3 Engine warm up, Engine check

Prior to engine check block the main wheels using chocks. Initially warm up the engine to 2,000 [rpm] for approximately 2 [min], then continue to 2,500 [rpm] till oil temperature reaches 50 [°C] (122 [°F]). The warm up period depends on ambient air temperature.

Check both ignition circuits at 4,000 [rpm] for Rotax 912 ULS. The engine speed drop during the time either magneto switched OFF should not exceed 300 [rpm]. The max. engine speed drop difference between circuits L and R should be 115 [rpm].

NOTE

Only one magneto should be switched ON (OFF) during ignition magneto check.

Set max. power for verification of max. static engine speed (5,000 ±100 [rpm]) with given propeller and engine parameters (temperatures and pressures).

Check acceleration from idling to max. power. If necessary, cool the engine at idle [rpm] before shutdown.

CAUTION

The engine check should be performed with the aircraft heading upwind and not on a loose terrain (the propeller may suck grit which can damage the leading edges of blades).

4.3 Taxiing

Apply power and brakes as needed. Apply brakes to control movement on ground. Taxi carefully when wind velocity exceeds 20 [knot] (11 [m/s]). Hold the control stick in neutral position.

4.4 Normal takeoff

4.4.1 Before takeoff

1. Altimeter - set
2. Trim - set neutral position
3. Control system - check free movement
4. Cockpit canopy - closed and locked

Recommendation: - **Before takeoff, manually check the canopy is locked by pushing the canopy upwards.**

5. Safety harness - fastened
6. Fuel selector - turn ON (*left or right fuel tank*)
7. Ignition switch - switched ON (*both magnetos*)
8. Wing flaps - extend as necessary

4.4.2 Takeoff

1. Brakes - apply to stop wheel rotation
2. Throttle - fully forward
3. Engine speed - check (*5,000 ±100 [rpm]*)
4. Engine gauges - within limits
5. Brakes - release
6. Elevator - control stick pull
7. Nose wheel unstick - *32 [knot] (59 [km/h])*
8. Airplane lift-off - *42 [knot] (78 [km/h])*
9. Climb - after reaching airspeed *65 [knot] (120 [km/h])*
10. Wing flaps - retract at safe altitude (*max. airspeed for flaps using is 75 [knot], 139 [km/h]*)

WARNING

Takeoff is prohibited if:

- Engine is running unsteadily
- Engine instrument values are beyond operational limits
- Aircraft systems (e.g. brakes or controls) work incorrectly
- Crosswind velocity exceeds permitted limits
(see Section 5 Performance, 5.7 Demonstrated wind performance)

4.5 Climb

1. Throttle
 - fully forward
(max. 5,800 [rpm] for max. 5 [min],
- max. continuous power (5,500 [rpm])
2. Airspeed
 - $V_x = 56$ [knot] (104 [km/h])
 - $V_y = 62$ [knot] (115 [km/h])
3. Trim
 - trim the airplane
4. Engine gauges
 - oil temperature, oil pressure and
CHT within limits

CAUTION

If the cylinder head temperature or oil temperature and/or coolant temperature approaches or exceeds limits, reduce the climb angle to increase airspeed and possibly return within limits. If readings do not improve, troubleshoot causes other than high power setting at low airspeed.

4.6 Best angle of climb speed (V_x): 56 [knot] (104 [km/h])

4.7 Best rate of climb speed (V_y): 62 [knot] (115 [km/h])

4.8 Cruise

Refer to Section 5, for recommended cruising figures.

4.9 Descend

1. Optimum glide speed
 - 60 [knot] (110 [km/h])

4.10 Approach

1. Approach speed - 60 [knot] (110 [km/h])
2. Throttle - as necessary
3. Wing flaps - extend as necessary
4. Trim - as necessary
5. Safety harness - fasten

CAUTION

It is not advisable to reduce the engine throttle control lever to minimum on final approach and when descending from very high altitude. In such cases the engine becomes under-cooled and a loss of power may occur. Descent at increased idle (approximately 3,000 [rpm]), speed between 60-75 [knot] (110-139 [km/h]) and check that the engine instruments indicate values within permitted limits.

4.11 Normal landing

4.11.1 Before landing

1. Throttle - as necessary
2. Airspeed - 60 [knot] (110 [km/h])
3. Wing flaps - extend as necessary
4. Trim - as necessary

4.11.2 Landing

1. Throttle - idle
2. Touch-down on main wheels
3. Apply brakes - as necessary
(after the nose wheel touch-down)

4.11.3 After landing

1. Throttle - engine rpm set as required for taxiing
2. Wing flaps - retract
3. Trim - set neutral position

4.11.4 Engine shut down

- | | |
|----------------------|---|
| 1. Throttle | - idle |
| 2. Instruments | - engine instruments within limits |
| 3. Switches | - switch OFF - except Instrument and Master |
| 4. Ignition switch | - turn key to switch OFF |
| 5. Instrument switch | - switch OFF |
| 6. Master switch | - switch OFF |
| 7. Fuel Selector | - close |

CAUTION

Rapid engine cooling should be avoided during operation. This happens above all during aircraft descent, taxiing and low engine [rpm] or at engine shutdown immediately after landing. Under normal conditions the engine temperatures stabilize during descent, taxiing and at values suitable to stop engine by switching the ignition off. If necessary, cool the engine at *idle* [rpm] to stabilize the temperatures prior to engine shut down.

4.12 Short field takeoff and landing procedures

None

4.13 Balked landing procedures

- | | |
|--------------------------|--|
| 1. Throttle | - fully forward
(max. 5,800 [rpm] for max. 5 [min],
- max. continuous power (5,500 [rpm])) |
| 2. Climb | - after reaching
65 [knot] (120 [km/h]) |
| 3. Trim | - adjust as necessary |
| 4. Wing flaps | - retract at safe altitude
(max. airspeed for flaps using is
75 [knot], 139 [km/h]) |
| 5. Trim | - adjust as necessary |
| 6. Repeat circle pattern | |

4.14 Aircraft parking and tie-down

1. Ignition switch - OFF
2. Master switch - OFF
3. Fuel selector - close
4. Parking brake - use it as necessary (if installed)
5. Canopy - close, lock as necessary
6. Secure the airplane

NOTE

It is recommended to use parking brake (if installed) for short-time parking only, between flights during a flight day. After ending the flight day or at low temperatures of ambient air, do not use parking brake, but use the wheel chocks instead.

NOTE

Use anchor eyes on the wings and fuselage rear section to fix the airplane. Move control stick forward and fix it together with the rudder pedals. Make sure that the cockpit canopy is properly closed and locked. The anchoring before leaving the airplane is important if the airplane is not equipped with a parking brake.

SECTION 5

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5. PERFORMANCE

The presented data has been computed from actual flight tests with the aircraft and engine in good conditions and using average piloting techniques. If not stated otherwise, the performance stated in this section is valid for maximum takeoff weight (600 [kg] / 1,320 [lb]) and under ISA conditions.

The performance shown in this section is valid for aircraft equipped with **ROTAX 912 ULS** engine with maximum power 73.5 [kW] (98.6 [hp]) and **WOODCOMP KLASSIC 170/3/R** three composite blades ground adjustable propeller with pitch setting 17.5°.

CAUTION

Airspeeds values are valid for standard AVIATIK WA037383 pitot-static probe.

5.1 Takeoff distances

- Conditions: - Altitude: 0 ft ISA
 - Engine power: full throttle
 - Flaps: 15°

RUNWAY SURFACE	Takeoff run distance		Takeoff distance over 50 ft (15 m) obstacle	
	ft	m	ft	m
CONCRETE	463	141	1,270	387
GRASS	702	214	1,499	457

5.2 Landing distances

- Conditions: - Altitude: 0 ft ISA
 - Engine power: idle
 - Flaps: 30°
 - Brakes fully depressed immediately after touch-down

RUNWAY SURFACE	Landing distance over 50 ft (15 m) obstacle		Landing run distance (braked)	
	ft	m	ft	m
CONCRETE	1,188	362	479	146
GRASS	1,109	338	364	111

5.3 Rate of climb

Conditions: Engine: full throttle Flaps: 0°	Best rate of climb speed Vy (IAS)		Rate of climb Vz	
	knot	km/h	fpm	m/s
Altitude				
0 ft	62	115	825	4.2
3000 ft	62	115	685	3.5
6000 ft	62	115	540	2.7
9000 ft	62	115	355	1.8

5.4 Cruise speeds

Altitude	Engine speed	IAS		CAS		TAS		MAP	Fuel consumption	
		knot	km/h	knot	km/h	knot	km/h		in Hg	l/h
1,000	4,200	72	133	72	133	73	135	23.7	13.6	3.59
	4,500	81	150	80	148	81	150	24.6	15.7	4.15
	4,800	91	169	89	165	89	165	25.5	18.0	4.76
	5,000	96	178	94	174	95	176	26.1	19.5	5.15
	5,300	105	194	102	189	103	191	27.0	21.9	5.79
	5,500	112	207	108	200	109	202	27.7	23.7	6.26
	5,700	118	219	113	209	114	211	28.3	25.8	6.82
3,000	4,200	68	126	69	128	72	133	22.2	13.2	3.49
	4,500	78	144	77	143	80	148	23.0	15.3	4.04
	4,800	86	159	85	157	88	163	23.8	17.5	4.62
	5,000	93	172	91	169	94	174	24.3	19.0	5.02
	5,300	102	189	99	183	102	189	25.1	21.4	5.65
	5,500	108	200	104	193	108	200	25.5	23.3	6.16
5,000	4,200	65	120	66	122	71	131	20.5	12.9	3.41
	4,500	74	137	74	137	79	146	21.3	14.9	3.94
	4,800	83	154	82	152	87	161	22.1	17.2	4.54
	5,000	89	165	87	161	93	172	22.7	18.7	4.94
	5,300	97	180	95	176	101	187	23.5	21.1	5.57
	5,500	103	191	100	185	107	198	24.1	22.8	6.02
7,000	4,200	62	115	63	117	69	128	19.3	12.5	3.30
	4,500	69	128	70	130	77	143	20.0	14.6	3.86
	4,800	79	146	78	144	85	157	20.6	16.8	4.44
	5,000	84	156	83	154	91	169	21.2	18.4	4.86
	5,300	92	170	90	167	99	183	22.0	20.8	5.49
	5,500	98	181	95	176	105	194	22.5	22.3	5.89
9,000	4,200	57	106	59	109	67	124	18.4	12.2	3.22
	4,500	64	119	65	120	74	137	19.0	14.3	3.78
	4,800	73	135	73	135	83	154	19.6	16.4	4.33
	5,000	79	146	78	144	89	165	20.0	18.0	4.76
	5,300	86	159	85	157	97	180	20.5	20.4	5.39
	5,500	92	170	90	167	103	191	20.8	21.8	5.76

5.5 RPM setting and fuel consumption

Altitude		ft	1,000					
Engine speed	<i>rpm</i>		4,200	4,500	4,800	5,000	5,300	5,500
Fuel consumption	<i>l/h</i>		13.6	15.7	18.0	19.5	21.9	23.7
	<i>US gal/h</i>		3.59	4.15	4.76	5.15	5.79	6.26
Airspeed	IAS	<i>knot</i>	72	81	91	96	105	112
		<i>km/h</i>	133	150	169	178	194	207
	CAS	<i>knot</i>	72	80	89	94	102	108
		<i>km/h</i>	133	148	165	174	189	200
	TAS	<i>knot</i>	73	81	89	95	103	109
		<i>km/h</i>	135	150	165	176	191	202
Endurance and Range at 113 liters (29.85 US gal)								
Endurance	<i>hh:mm</i>		8:18	7:11	6:16	5:47	5:09	4:46
Range	<i>NM</i>		607	583	559	551	531	520
	<i>km</i>		1123	1080	1035	1020	984	962
Endurance and Range at 90 liters (23.78 US gal)								
Endurance	<i>hh:mm</i>		6:37	5:43	5:00	4:36	4:06	3:47
Range	<i>NM</i>		483	464	445	438	423	414
	<i>km</i>		895	860	824	812	784	767
Endurance and Range at 60 liters (15.85 US gal)								
Endurance	<i>hh:mm</i>		4:24	3:49	3:20	3:04	2:44	2:31
Range	<i>NM</i>		322	310	297	292	282	276
	<i>km</i>		596	573	549	541	523	511
Endurance and Range at 30 liters (7.93 US gal)								
Endurance	<i>hh:mm</i>		2:12	1:54	1:40	1:32	1:22	1:15
Range	<i>NM</i>		161	155	148	146	141	138
	<i>km</i>		298	287	275	271	261	256
Endurance and Range at 15 liters (3.96 US gal)								
Endurance	<i>hh:mm</i>		1:06	0:57	0:50	0:46	0:41	0:37
Range	<i>NM</i>		81	77	74	73	71	69
	<i>km</i>		149	143	137	135	131	128

Altitude		<i>ft</i>	3,000					
Engine speed	<i>rpm</i>	4,200	4,500	4,800	5,000	5,300	5,500	
Fuel consumption	<i>l/h</i>	13.2	15.3	17.5	19.0	21.4	23.3	
	<i>US gal/h</i>	3.49	4.04	4.62	5.02	5.65	6.16	
Airspeed	IAS	<i>knot</i>	68	78	86	93	102	108
		<i>km/h</i>	126	144	159	172	189	200
	CAS	<i>knot</i>	69	77	85	91	99	104
		<i>km/h</i>	128	143	157	169	183	193
	TAS	<i>knot</i>	72	80	89	95	103	109
		<i>km/h</i>	133	148	165	176	191	202
Endurance and Range at 113 liters (29.85 US gal)								
Endurance	<i>hh:mm</i>	8:33	7:23	6:27	5:56	5:16	4:50	
Range	<i>NM</i>	616	591	568	559	539	524	
	<i>km</i>	1142	1094	1052	1035	997	970	
Endurance and Range at 90 liters (23.78 US gal)								
Endurance	<i>hh:mm</i>	6:49	5:52	5:08	4:44	4:12	3:51	
Range	<i>NM</i>	491	471	453	445	429	417	
	<i>km</i>	909	872	838	825	794	773	
Endurance and Range at 60 liters (15.85 US gal)								
Endurance	<i>hh:mm</i>	4:32	3:55	3:25	3:09	2:48	2:34	
Range	<i>NM</i>	327	314	302	297	286	278	
	<i>km</i>	606	581	559	550	530	515	
Endurance and Range at 30 liters (7.93 US gal)								
Endurance	<i>hh:mm</i>	2:16	1:57	1:42	1:34	1:24	1:17	
Range	<i>NM</i>	164	157	151	148	143	139	
	<i>km</i>	303	291	279	275	265	258	
Endurance and Range at 15 liters (3.96 US gal)								
Endurance	<i>hh:mm</i>	1:08	0:58	0:51	0:47	0:42	0:38	
Range	<i>NM</i>	82	78	75	74	71	70	
	<i>km</i>	152	145	140	137	132	129	

Altitude		ft	5,000					
Engine speed	<i>rpm</i>		4,200	4,500	4,800	5,000	5,300	5,500
Fuel consumption	<i>l/h</i>		12.9	14.9	17.2	18.7	21.1	22.8
	<i>US gal/h</i>		3.41	3.94	4.54	4.94	5.57	6.02
Airspeed	IAS	<i>knot</i>	65	74	83	89	97	103
		<i>km/h</i>	120	137	154	165	180	191
	CAS	<i>knot</i>	66	74	82	87	95	100
		<i>km/h</i>	122	137	152	161	176	185
	TAS	<i>knot</i>	71	79	87	93	101	107
		<i>km/h</i>	131	146	161	172	187	198
Endurance and Range at 113 liters (29.85 US gal)								
Endurance	<i>hh:mm</i>		8:45	7:35	6:34	6:02	5:21	4:57
Range	<i>NM</i>		622	599	572	562	541	530
	<i>km</i>		1152	1110	1059	1041	1002	982
Endurance and Range at 90 liters (23.78 US gal)								
Endurance	<i>hh:mm</i>		6:58	6:02	5:13	4:48	4:15	3:56
Range	<i>NM</i>		495	477	455	448	431	422
	<i>km</i>		917	884	843	829	798	782
Endurance and Range at 60 liters (15.85 US gal)								
Endurance	<i>hh:mm</i>		4:39	4:01	3:29	3:12	2:50	2:37
Range	<i>NM</i>		330	318	303	298	287	282
	<i>km</i>		612	589	562	553	532	521
Endurance and Range at 30 liters (7.93 US gal)								
Endurance	<i>hh:mm</i>		2:19	2:00	1:44	1:36	1:25	1:18
Range	<i>NM</i>		165	159	152	149	144	141
	<i>km</i>		306	295	281	276	266	261
Endurance and Range at 15 liters (3.96 US gal)								
Endurance	<i>hh:mm</i>		1:09	1:00	0:52	0:48	0:42	0:39
Range	<i>NM</i>		83	80	76	75	72	70
	<i>km</i>		153	147	141	138	133	130

Altitude		ft	7,000					
Engine speed	<i>rpm</i>		4,200	4,500	4,800	5,000	5,300	5,500
Fuel consumption	<i>l/h</i>		12.5	14.6	16.8	18.4	20.8	22.3
	<i>US gal/h</i>		3.30	3.86	4.44	4.86	5.49	5.89
Airspeed	IAS	<i>knot</i>	62	69	79	84	92	98
		<i>km/h</i>	115	128	146	156	170	181
	CAS	<i>knot</i>	63	70	78	83	90	95
		<i>km/h</i>	117	130	144	154	167	176
	TAS	<i>knot</i>	69	77	85	91	99	105
		<i>km/h</i>	128	143	157	169	183	194
Endurance and Range at 113 liters (29.85 US gal)								
Endurance	<i>hh:mm</i>		9:02	7:44	6:43	6:08	5:25	5:04
Range	<i>NM</i>		624	596	572	559	538	532
	<i>km</i>		1155	1104	1059	1035	996	985
Endurance and Range at 90 liters (23.78 US gal)								
Endurance	<i>hh:mm</i>		7:12	6:09	5:21	4:53	4:19	4:02
Range	<i>NM</i>		497	475	455	445	428	424
	<i>km</i>		920	879	843	824	793	785
Endurance and Range at 60 liters (15.85 US gal)								
Endurance	<i>hh:mm</i>		4:48	4:06	3:34	3:15	2:53	2:41
Range	<i>NM</i>		331	316	304	297	286	283
	<i>km</i>		613	586	562	550	529	523
Endurance and Range at 30 liters (7.93 US gal)								
Endurance	<i>hh:mm</i>		2:24	2:03	1:47	1:37	1:26	1:20
Range	<i>NM</i>		166	158	152	148	143	141
	<i>km</i>		307	293	281	275	264	262
Endurance and Range at 15 liters (3.96 US gal)								
Endurance	<i>hh:mm</i>		1:12	1:01	0:53	0:48	0:43	0:40
Range	<i>NM</i>		83	79	76	74	71	71
	<i>km</i>		153	147	141	137	132	131

Altitude		<i>ft</i>	9,000					
Engine speed	<i>rpm</i>		4,200	4,500	4,800	5,000	5,300	5,500
Fuel consumption	<i>l/h</i>		12.2	14.3	16.4	18.0	20.4	21.8
	<i>US gal/h</i>		3.22	3.78	4.33	4.76	5.39	5.76
Airspeed	IAS	<i>knot</i>	57	64	73	79	86	92
		<i>km/h</i>	106	119	135	146	159	170
	CAS	<i>knot</i>	59	65	73	78	85	90
		<i>km/h</i>	109	120	135	144	157	167
	TAS	<i>knot</i>	67	74	83	89	97	103
		<i>km/h</i>	124	137	154	165	180	191
Endurance and Range at 113 liters (29.85 US gal)								
Endurance	<i>hh:mm</i>		9:15	7:54	6:53	6:16	5:32	5:11
Range	<i>NM</i>		621	585	572	559	537	534
	<i>km</i>		1149	1083	1059	1035	995	989
Endurance and Range at 90 liters (23.78 US gal)								
Endurance	<i>hh:mm</i>		7:22	6:17	5:29	5:00	4:24	4:07
Range	<i>NM</i>		494	466	455	445	428	425
	<i>km</i>		915	863	844	824	793	788
Endurance and Range at 60 liters (15.85 US gal)								
Endurance	<i>hh:mm</i>		4:55	4:11	3:39	3:20	2:56	2:45
Range	<i>NM</i>		330	310	304	297	285	283
	<i>km</i>		610	575	562	549	528	525
Endurance and Range at 30 liters (7.93 US gal)								
Endurance	<i>hh:mm</i>		2:27	2:05	1:49	1:40	1:28	1:22
Range	<i>NM</i>		165	155	152	148	143	142
	<i>km</i>		305	288	281	275	264	263
Endurance and Range at 15 liters (3.96 US gal)								
Endurance	<i>hh:mm</i>		1:13	1:02	0:54	0:50	0:44	0:41
Range	<i>NM</i>		82	78	76	74	71	71
	<i>km</i>		153	144	141	137	132	131

5.6 Airspeed indicator system calibration

IAS	CAS
<i>knot</i>	
30	35
35	39
40	44
45	48
50	53
55	57
60	62
65	66
70	71
75	75
80	79
85	84
90	88
95	93
100	97
105	102
110	106
115	111
120	115
125	120
130	124
135	129
140	133

IAS	CAS
<i>km/h</i>	
55	64
60	68
70	77
80	86
90	95
100	104
110	113
120	122
130	131
140	140
150	149
160	158
170	167
180	176
190	185
200	194
210	203
220	212
230	221
240	230
250	239
255	243

5.7 Demonstrated wind performance

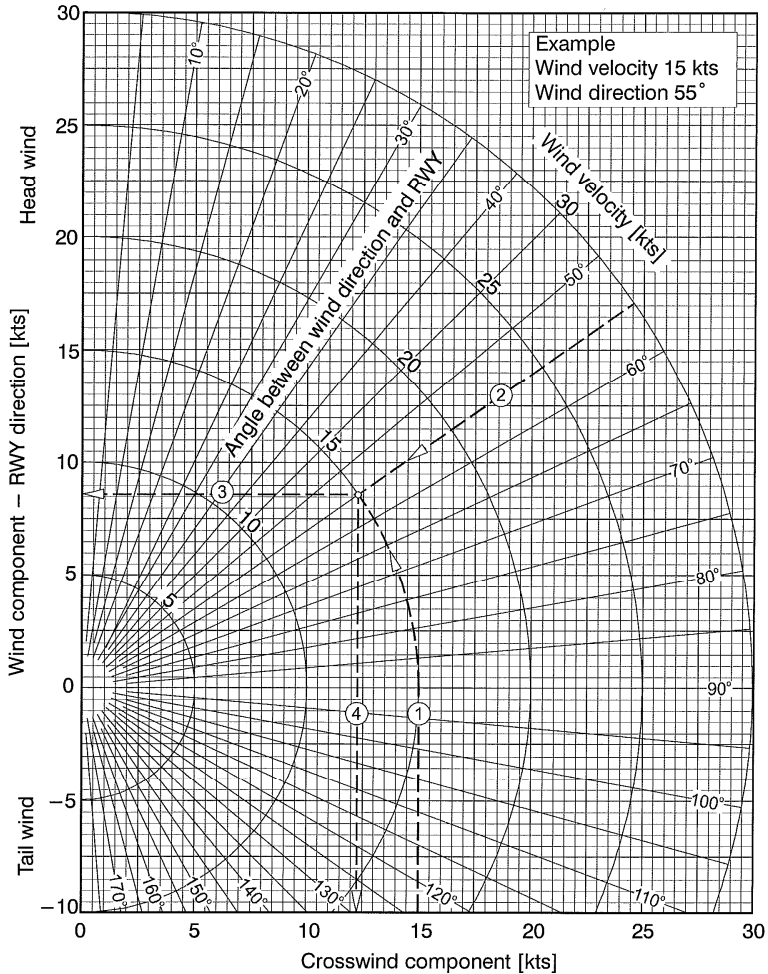
Max. demonstrated headwind velocity for take-off and landing:

24 [knot] (13 [m/s])

Max. demonstrated crosswind velocity for take-off and landing:

12 [knot] (6,5 [m/s])

Wind components figure



Example: 1. Wind velocity15 knots 3. Headwind component..... 8.6 knots
 2. Wind direction55° 4. Crosswind component..... 12.3 knots

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SECTION 6

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6. WEIGHT AND BALANCE

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6. WEIGHT AND BALANCE

6.1 Introduction

This section contains weight and balance records and the payload range for safe operation of *PiperSport* aircraft.

Procedures for weighing the aircraft and the calculation method for establishing the permitted payload range are contained in FAA Aviation Advisory Circular AC.43.13 – 1B.

6.2 Airplane weighing procedure

1. Preparation

- remove all impurities from the aircraft as well as further undesirable objects
- inflate tires to recommended operating pressure
- drain fuel from fuel installation
- add oil, hydraulic and cooling liquid up to the maximum specified value
- retract wing flaps, close the canopy and other lids and covers, remove control surfaces blocking
- level the airplane according to the rivet line located on the fuselage (on LH and RH sides) under the canopy frame

2. Leveling

- Place scales under each wheel
- Deflate the nose tire and/or lower or raise the nose strut to properly center the bubble in the level.

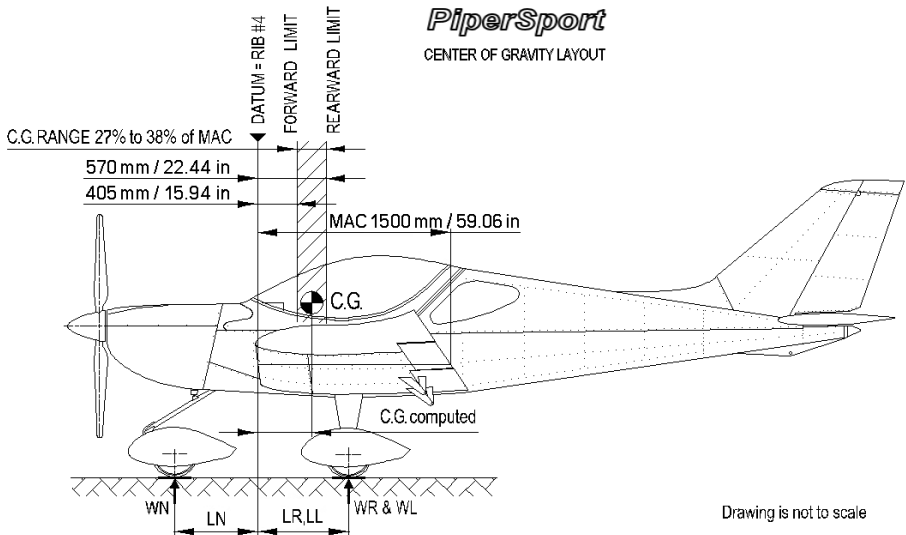
3. Weighing

- With the airplane level and brakes released, record the weight shown on each scale. Deduct the tare, if any, from each reading.

4. Measuring

- Obtain measurement LR and LL by measuring horizontally (along the airplane center line) from a line stretched between the Rib No. 4.
 - Obtain measurement LN by measuring horizontally and parallel to the airplane center line, from center of nose wheel axle left sides, to a plumb bob dropped from the Rib No. 4. Repeat on right side and average the measurements.
5. Using weights from item 3. and measurements from item 4. the airplane weight and C.G. can be determined.
 6. Basic Empty Weight may be determined by completing appropriate table.

6.3 Weight and balance C.G. layout



6.4 Operating weights and loading

Max. takeoff weight.....	600 [kg]	(1,320 [lb])
Max landing weight.....	600 [kg]	(1,320 [lb])
Max. weight of fuel.....	82 [kg]	(180 [lb])
Max. baggage weight in rear fuselage.....	18 [kg]	(40 [lb])
Max. baggage weight in each wing locker.....	20 [kg]	(44 [lb])
Empty weight (minimum equipment).....	345 [kg]	(760 [lb])

NOTE

Actual Empty weight is shown in Section 9, Supplement No. 02

Number of seats.....	2	
Minimum crew.....	1 pilot on the left seat	
Minimum crew weight.....	43 [kg]	(95 [lb])
Maximum crew weight on each seat.....	115 [kg]	(253 [lb])

6.5 C.G. range and determination

Aircraft C.G. range:

Operating C.G. range.....	27 to 38 [%] of MAC	
	405 to 570 [mm] (15.94 to 22.44 [in]) of MAC	
Empty weight C.G. range.....	28 to 32 [%] of MAC	
	420 to 480 [mm] (16.54 to 18.90 [in]) of MAC	

Aircraft C.G. determination:

NOTE

Actual Weight and Balance record is shown in Section 9, Supplement No. 02.

Blank form of Weight & Balance record

AIRCRAFT EMPTY C.G.	ITEM	WEIGHT [kg/lb]	ARM [mm/in]	MOMENT (WEIGHT x ARM)
	RIGHT MAIN WHEEL	$W_{R=}$	$L_{R=}$	
	LEFT MAIN WHEEL	$W_{L=}$	$L_{L=}$	
	NOSE WHEEL	$W_{N=}$	$L_{N=}$ - negative arm	-
	COMPUTED C.G. EMPTY	Empty weight: $W_E=$ [kg/lb]	C.G.= [mm/in] % MAC	Aircraft moment: $M_E=$

AIRCRAFT C.G.	WEIGHT [kg/lb]	ARM [mm/in]	MOMENT (WEIGHTxARM)
EMPTY AIRCRAFT		-----	
PILOT		700 / 27.56	
PASSENGER		700 / 27.56	
BAGGAGE COMPARTMENT - A		1,310 / 51.58	
BAGGAGE COMPARTMENT - B		1,800 / 70.87	
WING LOCKERS		600 / 23.62	
FUEL TANKS		180 / 7.09	
TOTAL	$W_T=$		$M_T=$
TAKEOFF WEIGHT	[kg/lb]		C.G.= [mm/in] [%] MAC

NOTE:

EMPTY WEIGHT INCLUDING OIL, COOLANT AND HYDRAULIC FLUID.

MAXIMUM FUEL QUANTITY IN WING TANKS (82.1KG=114L / 180.62LB=30.1US GAL) IS USED FOR MOST FORWARD C.G. CALCULATION.

MINIMUM FUEL QUANTITY IN WING TANKS FOR 30 MINUTES FLIGHT (10.1KG=14L / 22.2LB=3.7US GAL) IS SUBTRACTED FROM MTOW (600KG / 1,320LB). MOST REARWARD C.G. CALCULATION IS DONE WITH ZERO FUEL QUANTITY (AFTER FUEL DEPLETION).

Max. takeoff weight : 600 [kg] (1,320 [lb])

Max. weight in baggage compartment A+B : 18 [kg] (40 [lb])

Max. weight in wing lockers together : 40 [kg] (88 [lb])

Empty weight C.G. range : 420 to 480 [mm] (16.54 to 18.90 [in]) / 28 to 32 [%] of MAC

Operating C.G. range : 405 to 570 [mm] (15.94 to 22.44 [in]) / 27 to 38 [%] of MAC

Maximum useful weight:

$$W_{Max. Useful} = W_{Max. Takeoff} - W_E$$

$$W_{Max. Useful} = 600 [kg] (1,320 [lb]) - \underline{\hspace{2cm}} = \underline{\hspace{2cm}} [kg]/[lb]$$

This useful weight must be never exceeded!

NOTE: MAXIMUM USEFUL WEIGHT INCLUDING PILOT, PASSENGER, BAGGAGE AND FUEL.

$$\text{Aircraft C.G.} = \frac{M_E (M_T)}{W_E (W_T)} [mm/in] \times \frac{100}{MAC} [%]$$

Registration:
Serial No.:
Date:
By:

6.6 Permitted payload range table

NOTE

Actual Permitted payload range table is shown in Section 9, Supplement No. 02.

Blank form of Permitted payload range table

<i>PiperSport</i>			Serial No. :				
F U E L	gauges together		for 30 min flight	1 / 4	1 / 2	3 / 4	1
	volume	liter	14	28.5	57	85.5	114
		US gal	3.7	7.5	15.1	22.6	30.1
	weight	kg	10.1	20.5	41	61.6	82.1
lb		22.2	45.1	90.3	135.4	180.6	
B A G G E	No baggage	kg					
		lb					
	½ rear (A) 9 [kg] (20 [lb])	kg					
		lb					
	rear (A) 18 [kg] (40 [lb])	kg					
		lb					
	½ wing lockers 20 [kg] (44 [lb])	kg					
		lb					
	½ rear (A) + ½ wing lockers 29 [kg] (64 [lb])	kg					
		lb					
	rear (A) + ½ wing lockers 38 [kg] (84 [lb])	kg					
		lb					
	wing lockers 40 [kg] (88 [lb])	kg					
		lb					
	½ rear (A) + wing lockers 49 [kg] (108 [lb])	kg					
		lb					
rear (A) + wing lockers 58 [kg] (128 [lb])	kg						
	lb						
Crew weight = Max. Takeoff weight - Empty weight - Baggage weight - Fuel weight							

Crew weight values must be determined with regard on rearward C.G. limit.
Max. takeoff weight : 600 [kg] (1,320 [lb])

6.7 Installed equipment list

NOTE

Actual Installed equipment list is shown in Section 9, Supplement No. 02.

SECTION 7

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7. DESCRIPTION OF AIRPLANE AND SYSTEMS

7.1 *General*

This section provides description and operation of the aircraft and its systems.

PiperSport aircraft is a single-engine, all metal, low-wing monoplane of semi-monocoque structure with two side-by-side seats. The airplane is equipped with a fixed tricycle undercarriage with castoring nose wheel.

Some parts of airplane are made from fiberglass laminate.

7.2 *Airframe*

All-metal construction, stressed skin, single curvature metal skins riveted to stiffeners. Construction is of 6061-T6 aluminum sheet metal riveted to aluminum angles with Avex rivets. This high strength aluminum alloy construction provides long life and low maintenance costs thanks to its durability and corrosion resistance characteristics.

The wing has a high lift airfoil equipped with flaps.

7.3 *Flight controls*

The plane is equipped with a dual stick control, the adjustable rudder pedals with pedal hydraulic brakes for easy ground control of the castoring nose wheel.

Lateral and longitudinal control movement is transferred by mechanical system of pull rods and levers.

Rudder control is controlled by pedals of foot control. The rudder is interconnected with foot control pedals by cable system.

The elevator and aileron trims are electrically actuated by buttons on the control stick.

Wing flaps are electrically actuated by the rocker switch located on the middle panel.

7.4 Instrument panel

Actual picture, description and data for follow items are shown in Section 9, Supplement No.02:

- **Instrument panel layout**
- **Description of instrumentation and controls in the cockpit**
- **Instruments and Avionics**

NOTE

For instrument and avionics operating instructions refer to the documentation supplied with the instruments and avionics.

7.5 Engine

ROTAX 912 ULS engine 73.5 [kW] (98.6 [hp]) is installed in *PiperSport*. Rotax 912 ULS is a 4-stroke, 4-cylinder, horizontally opposed, spark ignition engine with one central camshaft-push-rod-OHV. Liquid cooled cylinder heads, ram air cooled cylinders.

Dry sump forced lubrication. Dual contactless capacitor discharge ignition. The engine is fitted with an electric starter, AC generator and mechanical fuel pump. Prop drive via reduction gear with integrated shock absorber.

For information about engine performance, speeds and limits see :

- *Section 2, chapter 2.12 "Engine operating speeds and limits" in this POH*
- *Rotax "Operators manual" for engine type 912 series*

Engine controls

Throttle and Choke

Engine power is controlled by means of the THROTTLE lever and the CHOKE lever which are positioned in the middle channel between the seats side by side. Both levers are mechanically connected (*by cable*) to the flap on the carburetors. Springs are added to the throttle push rods to ensure that the engine will go to full power if the linkages fail.

Carburetor preheating

Heated air streaming from a heat exchanger to the carburetor through the airbox. The control lever is installed on the middle panel.

Ignition switch

Ignition switch must be on “BOTH” position to operate the engine. For safety remove the key when engine is not running.

NOTE

Ignition system is independent of the power source and will operate even with Master switch and/or breaker OFF.

Engine instruments

EMS screen displays all “Engine Instruments” as follows:

- engine speed
- manifold pressure
- oil pressure and temperature
- exhaust gas temperature
- cylinder head temperature
- fuel pressure and flow

For information about engine instruments range and markings see:

- *Section 2, chapter 2.13 “Engine instruments markings”.*

7.6 Propeller

Standard **WOODCOMP KLASSIC 170/3/R** three composite blades ground adjustable propeller is installed.

NOTE

For technical data refer to documentation supplied by the propeller manufacturer.

7.7 Landing gear

Aircraft is equipped with tricycle landing gear.

Main landing gear uses two fiberglass spring elements. Each main gear wheel is equipped with an independent, hydraulically operated, disc type brakes. Nose wheel is free casting. Steering is accomplished by differential application of individual main gear brakes.

7.8 Baggage compartment

The rear baggage compartment is located behind seats. It may accommodate up to 18 [kg] (40 [lb]). This space is divided to two sections:

- **A** baggage compartment – lowered part of the baggage compartment, close to seats and
- **B** baggage compartment – raised part of the baggage compartment, further from seats.

Baggage compartment is fitted with four tie-down straps for baggage fixation.

Load heavy items in compartment A. and lighter items in compartment B.

Baggage may also be loaded into the baggage compartment inside each wing up to 20 [kg] (44 [lb]), in each wing locker.

Make sure that baggage does not exceed maximum allowable weight, and that the aircraft C.G. is within limits with loaded baggage.

NOTE

The baggage compartment in wing lockers are not waterproof.

CAUTION

All baggage must be properly secured.

7.9 Seats and safety harnesses

Side-by-side seating. Seat cushions are removable for easy cleaning and drying. Four point safety belts provided to each seat. Additional seat upholstery to raise the small pilot or move him forward is optional.

NOTE

Prior to each flight, ensure that the seat belts are firmly secured to the airframe and that the belts are not damaged. Adjust the buckle to a central position on the body.

7.10 Canopy

Access to the cabin is from both sides. Make sure that the canopy is latched and mechanism is securely locked into position on both sides before operating the aircraft.

7.11 Fuel system

Each tank is equipped with a vent outlet, finger screen filter and float sensor. Drain valve located in the lowest point of the each tank and on the bottom edge of the bulkhead, on the gascollator.

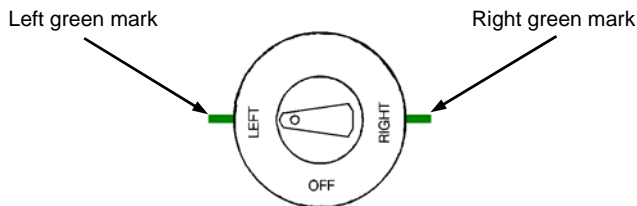
Fuel selector valve is on the central console in the cockpit.

The electric fuel pump is located on bulkhead and it is used for fuel line filling before engine starting.

Fuel return hose goes from the fuel pump into the left tank.

CAUTION

During operation, fuel valve shall be in "LEFT" or "RIGHT" tank position (position on green mark).



NOTE

*If left tank is full, start engine with the fuel selector set to **LEFT**. If you would start the engine with the fuel selector set to **RIGHT** and the left tank is full, than fuel bleed from the left tank vent may occur because a fuel return hose is led only into the left tank and returning fuel will overflow the left tank.*

CAUTION

Do not overfill the tanks to avoid fuel overflow through venting tubes.

7.12 Electrical system

Battery

The 12 [V] battery is mounted on the front side of forward bulkhead.

Master switch

Master switch connects the electrical system to the 12 [V] battery.

7.13 Pitot-static system

Standard **AVIATIK WA037383 pitot-static probe** is located below the left wing. Pressure distribution to the instruments is through flexible plastic hoses. Keep the pitot head clean to ensure proper function of the system.

**SECTION 7
DESCRIPTION OF
AIRPLANE AND SYSTEMS**

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SECTION 8

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8. HANDLING AND SERVICING

8.1 Introduction

This section contains factory-recommended procedures for proper ground handling and servicing of the airplane. It also identifies certain inspection and maintenance requirements, which must be followed if the airplane is to retain that new-plane performance and dependability.

8.2 Ground handling

8.2.1 Parking

It is advisable to park the airplane inside a hangar or alternatively inside any other suitable space (*garage*) with stable temperature, good ventilation, low humidity and dust-free environment.

It is necessary to moor the airplane when it is parked outside a hangar. Also when parking for a long time, cover the cockpit canopy, possibly the whole airplane by means of a suitable tarpaulin.

8.2.2 Jacking

Since the empty weight of this aircraft is relatively low, two people can lift the aircraft easily. First of all prepare two suitable supports to support the aircraft.

It is possible to lift the aircraft by handling the following parts:

- By pushing the fuselage rear section down in the place of a bulkhead the fuselage front section may be raised and then supported under the firewall.
- By holding the fuselage rear section under a bulkhead the fuselage rear may be raised and then supported under that bulkhead.
- To lift up a wing, push from underneath that wing **only** at the main spar area. Do not lift up a wing by handling the wing tip.

8.2.3 Road transport

The aircraft may be transported after loading on a suitable car trailer. It is necessary to dismantle the wings before road transport. The aircraft and dismantled wings should be attached securely to protect these parts against possible damage.

8.3 Towing instructions

To handle the airplane on ground use the *Tow Bar*, or if pushing the airplane by hand, push on the aft fuselage, placing your hands over an area of skin supported by a bulkhead.

CAUTION

Avoid excessive pressure at the airplane airframe-especially at control surfaces. Keep all safety precautions, especially in the propeller area.

8.4 Tie-down instructions

The airplane should be moored when parked outside a hangar after the flight day. The mooring is necessary to protect the airplane against possible damage caused by wind and gusts.

For this reason the aircraft is equipped with mooring eyes located on the lower surfaces of the wings.

Tie-down procedures:

1. Fuel Selector close, Master switch and other switches switched OFF, Ignition switch switched OFF
2. Fix the hand control using e.g. safety harness
3. Close air vent
4. Close and lock canopy
5. Moor the aircraft to the ground by means of a mooring rope passed through the mooring eyes located on the lower surfaces of the wings and below rear fuselage.

NOTE

In the case of long term parking, especially during winter, it is recommended to cover the cockpit canopy or possibly the whole aircraft by means of a suitable tarpaulin attached to the airframe.

8.5 Servicing operating fluids

See appropriate chapters in the ROTAX engine Maintenance and Operator's manuals and *PiperSport* aircraft Maintenance manual for more instructions.

8.5.1 Approved fuel grades and specifications

Recommended fuel type:

(refer to the ROTAX Operator's manual section 10.2.2 Fuel, Rotax Service Instruction SI-912-016)

MOGAS

- European standard - min. RON 95, EN 228 Super, EN 228 Super plus
- US standard - ASTM D4814
- Canadian standard - min. AKI 91, CAN/CGSB-3.5 Quality 3

CAUTION

Fuels that contain more than 5% ethanol blend have not been tested and are not permitted for use.

AVGAS

- US standard - AVGAS 100 LL (ASTM D910)

AVGAS 100 LL 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 it should only be used in case of problems with vapor lock or when other types of gasoline are unavailable.

Fuel volume:

- Wing fuel tanks volume.....2x57 [liter] (2x15.06 [US gal])
- Unusable fuel quantity2x0.5 [liter] (2x0.13 [US gal])

8.5.2 Approved oil grades and specifications

Recommended oil type:

(refer to the Rotax Operator's manual section 10.2.3 Lubricants, Rotax Service Instruction SI-912-016)

Motorcycle 4-stroke engine oil of registered brand with gear additives.

Use only oil with API "SG" classification or higher!

Use multi-grade oil. Use of mineral oil is not recommended.

Type of oil used by aircrafts manufacturer:

- see Section 9, Supplement No. 02

Oil volume:

- Minimum3.3 [liter] (0.87 [US gal])
- Maximum3.8 [liter] (1.0 [US gal])

8.5.3 Approved coolant grades and specifications

Recommended coolant type:

(refer to the Rotax Operator's manual section 10.1.2 Operating speeds and limits and section 10.2.1 Coolant, Rotax Installation manual section 12 Cooling system, Rotax Service Instruction SI-912-016)

In principle, 2 different types of coolant are permitted:

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

WARNING

The coolant concentrate (propylene glycol) may not be mixed with conventional (glycol/water) coolant or with additives!

Non observance can lead to damages to the cooling system and engine.

Type of coolant used by aircrafts manufacturer:

- see Section 9, Supplement No. 02

Coolant liquid volume:

It is approximately.....2.5 [liter] (0.66 [US gal])

8.6 Cleaning and care

Use efficient cleaning detergents to clean the aircraft surface. Oil spots on the aircraft surface (*except the canopy!*) may be cleaned with petrol.

The canopy may only be cleaned by washing it with a sufficient quantity of lukewarm water and an adequate quantity of detergents. Use either a soft, clean cloth sponge or deerskin. Then use suitable polishers to clean the canopy.

CAUTION

*Never clean the canopy under "dry" conditions and **never** use petrol or chemical solvents!*

Upholstery and covers may be removed from the cockpit, brushed and eventually washed in lukewarm water with an adequate quantity of detergents. Dry the upholstery thoroughly before insertion into the cockpit.

CAUTION

In the case of long term parking, cover the canopy to protect the cockpit interior from direct sunshine.

8.7 Assembly and disassembly

Refer to the *PiperSport* aircraft Maintenance manual and the *PiperSport* aircraft Assembly photo manual.

8.8 Aircraft inspection periods

Periods of overall checks and contingent maintenance depends on the condition of the operation and on overall condition of the airplane.

Inspections and revisions should be carried out in the following periods, at least:

- after the first 25 flight hours
- after 50 flight hours
- after every 100 flight hours or at least annual inspection

Refer to the *PiperSport aircraft Maintenance manual* for aircraft maintenance.

Refer to the *Rotax engine Maintenance manual* for engine maintenance.

Maintain the propeller according to its manual.

All repairs and maintenance should be made in accordance with AC 43.13-1B.

8.9 Aircraft alterations or repairs

It is recommended to contact the airplane manufacturer prior to any alternations to the aircraft to ensure that the airworthiness of the aircraft is not violated. Always use only the original spare parts produced by the airplane (engine, propeller) manufacturer.

If the aircraft weight is affected by any alternation, a new weighing is necessary, then record the new empty weight into the Weight and Balance record / Permitted payload range and up-date the placard showing weights in the cockpit.

SECTION 9

TABLE OF CONTENTS

9. SUPPLEMENTS

9.1 List of inserted supplements	9-2
9.2 Inserted supplements	9-2

9. SUPPLEMENTS

This section contains the appropriate supplements necessary to safely and efficiently operate the aircraft when equipped with various optional systems and equipment not provided with the standard airplane.

9.1 *List of inserted supplements*

Date	Suppl. No.	Title of inserted supplement	Revision No.
10/03/31	01	Aircraft Flight Training Supplement	-
11/02/09	02	Aircraft specification S/N: P1001085	-

9.2 *Inserted Supplements*

Supplement No. 01

Aircraft Flight Training Supplement

Introduction

The *PiperSport* flying characteristics and behavior are similar to other single engine aircraft.

Following training procedure is applicable if the pilot is holder of PPL or LSA Pilot License.

The training flight hours are recommended minimum and depends on the Flight Instructor if student pilot is ready to continue on in next training step.

Training can be performed by Flight Instructor or by the experienced pilot who has minimum 20 hours on the *PiperSport*.

Type Rating Training Procedure:

Ground Training

Before practical Flight Training the pilot has to get familiar with following procedures and documentation:

- *Pilot's Operating Handbook (POH)*
- *Aircraft Maintenance manual*
- *Aircraft preflight inspection procedure*
- *Control Checklists*
- *Radio, avionics, aircraft and engine controls procedures*
- *Differences in control and aircraft handling*
- *Emergency procedures*

Flight training program (recommended):

Flight Training Procedure		Dual		Solo	
		Flights	Time	Flights	Time
1.	<i>Check flight</i>	1	30'	-	-
2.	<i>Pattern training flights up to 1,000 ft AGL</i>	4	20'	3	15'
3.	<i>Pattern training flights up to 500 ft AGL</i>	4	20'	3	15'
4.	<i>Stall speed, 45°turns, side slips</i>	1	30'	1	45'
5.	<i>Emergency landing training</i>	4	20'	3	15'
Total:		14	2 hr	10	1,5 hr

Flight Training Procedure - description:

1. Check flight

Student Pilot will fly the airplane in local flight, instructor giving advice as necessary.

2. Pattern training flights up to 1,000 feet AGL

High pattern procedures, instructor giving advice as necessary.

3. Pattern training flights up to 500 feet AGL

High pattern procedures, instructor giving advice as necessary.

4. Stall speed, 45°turns, sideslips

Stall speed flaps retracted and extended (landing configuration), sideslips at landing configuration.

5. Emergency landing training

Emergency procedures and landing to 1/3 of runway.

Note:

During solo flights instructor is observing the student pilot on pattern and can advise by radio as necessary.

Endorsement:

Instructor will endorse the Type Rating to the Pilots Logbook, if required.

Supplement No. 02
AIRCRAFT SPECIFICATION

In this Supplement No. 02 – the Weight & Balance & Equipment is shown for real S/N of the aircraft.

Aircraft Registration number :

Aircraft Serial Number : **P1001085**

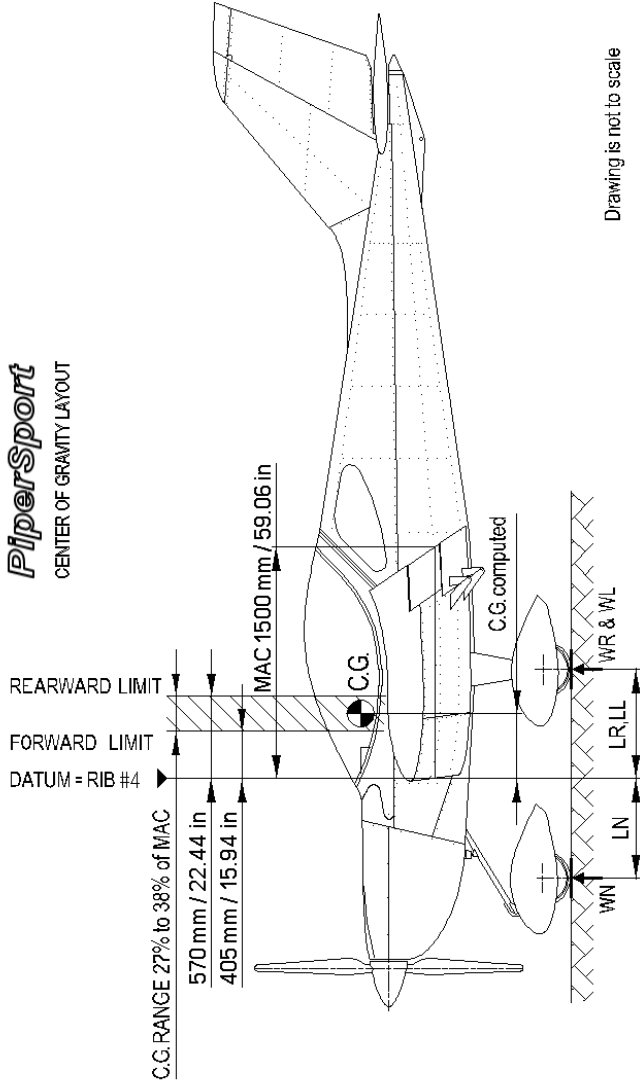
This Supplement must be attached to the POH during airplane operation.

Information in this Supplement completes or replaces information in the basic POH for the below mentioned parts only. Limitations, procedures and information not mentioned in this Supplement and included in the basic POH stay valid.

This Supplement completes information necessary for the airplane operation with equipment installed on the airplane.

6. WEIGHT AND BALANCE

6.3 Weight and balance C.G. layout



6.5 C.G. range and determination

Aircraft C.G. determination

WEIGHT & BALANCE RECORD
Empty Weight C.G. Check
of PiperSport aircraft S/N : P1001085

AIRCRAFT EMPTY C.G.	ITEM	WEIGHT [kg]	ARM [mm]	MOMENT (WEIGHT x ARM)
	RIGHT MAIN WHEEL	$W_R = 143.6$	$L_R = 805$	115,598.0
	LEFT MAIN WHEEL	$W_L = 142.6$	$L_L = 800$	114,080.0
	NOSE WHEEL	$W_N = 86.8$	$L_N = -709$ negative arm	- 61,541.2
	COMPUTED C.G. EMPTY	Empty weight: $W_E = 373.0$ [kg]	C.G. = 450.8 [mm] 30.1 [%] MAC	Aircraft moment: $M_E = 168,136.8$

NOTE: EMPTY WEIGHT INCLUDING OIL, COOLANT AND HYDRAULIC FLUID.

Empty weight C.G. range : 420 to 480 [mm] / 28 to 32 [%] of MAC

Max. takeoff weight : 600 [kg]

Maximum useful weight:

$$\begin{aligned}
 W_{Max. Useful} &= W_{Max. Takeoff} - W_E \\
 W_{Max. Useful} &= 600 \text{ [kg]} - 373.0 \text{ [kg]} = \underline{\underline{227.0 \text{ [kg]}}}
 \end{aligned}$$

This useful weight must be never exceeded!

NOTE: MAXIMUM USEFUL WEIGHT INCLUDING PILOT, PASSENGER, BAGGAGE AND FUEL.

$$\text{Aircraft C.G.} = \frac{M_E}{W_E} \text{ [mm]} \times \frac{100}{MAC} \text{ [%]}$$

2011-02-09

WEIGHT & BALANCE RECORD
Forward C.G. Check
of PiperSport aircraft S/N : P1001085

FORWARD C.G.	WEIGHT [kg]	ARM [mm]	MOMENT (WEIGHTxARM)
EMPTY AIRCRAFT	373.0	-----	168,136.8
PILOT	43.0	700	30,100.0
PASSENGER	0.0	700	0.0
BAGGAGE COMPARTMENT - A	0.0	1,310	0.0
BAGGAGE COMPARTMENT - B	0.0	1,800	0.0
WING LOCKERS	0.0	600	0.0
FUEL TANKS	82.1	180	14,778.0
TOTAL	$W_T = 498.1$ [kg]		$M_T = 213,014.8$
TAKEOFF WEIGHT	498.1 [kg]		C.G. = 427.7 [mm] 28.5 [%] MAC

NOTE:

MAXIMUM FUEL QUANTITY IN WING TANKS (82.1KG=114L) IS USED FOR MOST FORWARD C.G. CALCULATION.

Max. takeoff weight : 600 [kg]

Max. weight in baggage compartment A+B : 18 [kg]

Max. weight in wing lockers together : 40 [kg]

Operating C.G. range : 405 to 570 [mm] / 27 to 38 [%] of MAC

$$\text{Aircraft C.G.} = \frac{M_T}{W_T} \text{ [mm]} \times \frac{100}{\text{MAC}} \text{ [%]}$$

2011-02-09

WEIGHT & BALANCE RECORD
Rearward C.G. Check
of PiperSport aircraft S/N : P1001085

REARWARD C.G.	WEIGHT [kg]	ARM [mm]	MOMENT (WEIGHTxARM)
EMPTY AIRCRAFT	373.0	-----	168,136.8
PILOT	86.4	700	60,480.0
PASSENGER	86.4	700	60,480.0
BAGGAGE COMPARTMENT - A	15.0	1,310	19,650.0
BAGGAGE COMPARTMENT - B	3.0	1,800	5,400.0
WING LOCKERS	26.1	600	15,660.0
FUEL TANKS	0.0	180	0.0
TOTAL	$W_T = 589.9$ [kg]		$M_T = 329,806.8$
TAKEOFF WEIGHT	589.9 [kg]		C.G. = 559.1 [mm] 37.3[%] MAC

NOTE:

MINIMUM FUEL QUANTITY IN WING TANKS FOR 30 MINUTES FLIGHT (10.1KG=14L) IS SUBTRACTED FROM MTOW (600KG). MOST REARWARD C.G. CALCULATION IS DONE WITH ZERO FUEL QUANTITY (AFTER FUEL DEPLETION).

Max. takeoff weight : 600 [kg]

Max. weight in baggage compartment A+B : 18 [kg]

Max. weight in wing lockers together : 40 [kg]

Operating C.G. range : 405 to 570 [mm] / 27 to 38 [%] of MAC

$$\text{Aircraft C.G.} = \frac{M_T}{W_T} \text{ [mm]} \times \frac{100}{\text{MAC}} \text{ [%]}$$

Serial No.:	P1001085
Date:	2011-02-09
By:	Pavel Lukeš

6.6 Permitted payload range table

PiperSport			Serial No. : P1001085				
F U E L	gauges together		for 30 min flight	1 / 4	1 / 2	3 / 4	1
	volume	liter	14	28.5	57	85.5	114
		US gal	3.7	7.5	15.1	22.6	30.1
	weight	kg	10.1	20.5	41	61.6	82.1
lb		22.2	45.1	90.3	135.4	180.6	
			Permitted crew weight				
B A G G A G E	No baggage	kg	217	207	186	165	145
		lb	477	454	409	364	319
	½ rear (A) 9 [kg] (20 [lb])	kg	208	198	177	156	136
		lb	457	435	389	344	299
	rear (A) 18 [kg] (40 [lb])	kg	199	189	168	147	127
		lb	438	415	370	324	279
	½ wing lockers 20 [kg] (44 [lb])	kg	197	187	166	145	125
		lb	433	410	365	320	275
	½ rear (A) + ½ wing lockers 29 [kg] (64 [lb])	kg	188	178	157	136	116
		lb	413	391	345	300	255
	rear (A) + ½ wing lockers 38 [kg] (84 [lb])	kg	179	169	148	127	107
		lb	394	371	326	280	235
	wing lockers 40 [kg] (88 [lb])	kg	177	167	146	125	105
		lb	389	366	321	276	231
	½ rear (A) + wing lockers 49 [kg] (108 [lb])	kg	168	158	137	116	96
		lb	369	347	301	256	211
rear (A) + wing lockers 58 [kg] (128 [lb])	kg	159	149	128	107	87	
	lb	350	327	282	236	191	
Crew weight = Max. Takeoff weight - Empty weight - Baggage weight - Fuel weight							

Crew weight values must be determined with regard on rearward C.G. limit.

Max. takeoff weight : 600 [kg] (1,320 [lb])

2011-02-09

6.7 Installed equipment list of PiperSport aircraft S/N : P1001085

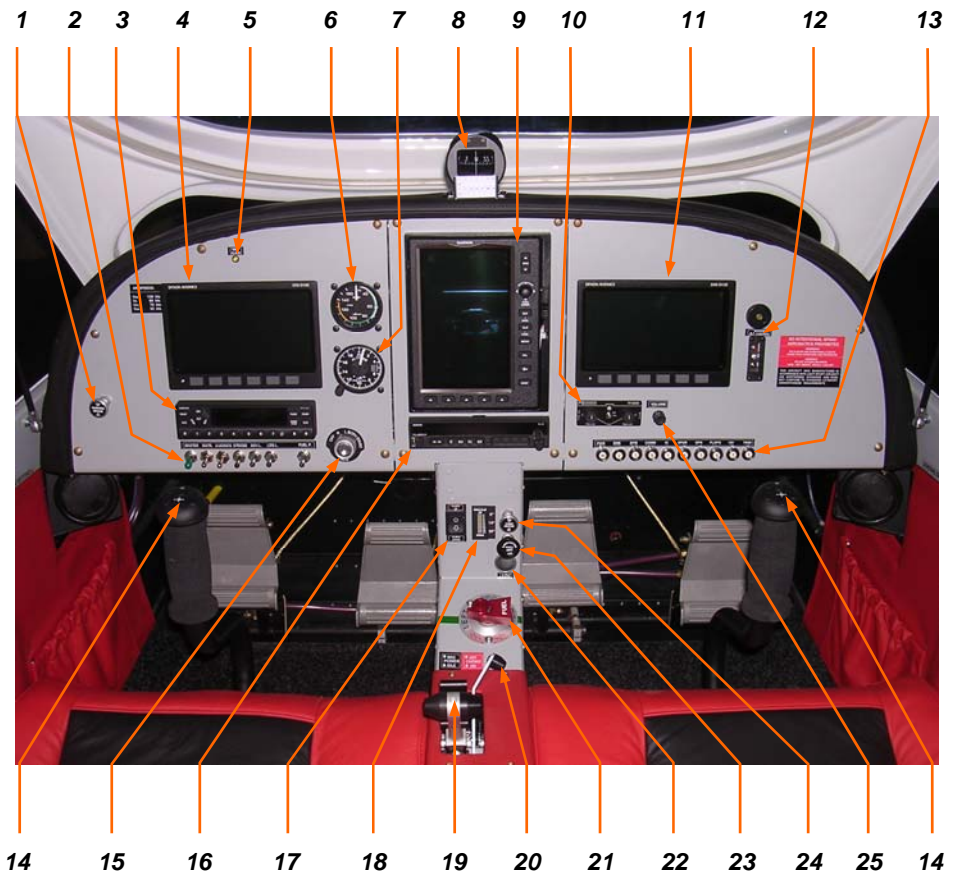
- *Rotax 912 ULS*
- *Woodcomp KLASSIC 170/3/R*
- *Dynon D100 EFIS*
- *Dynon D120 EMS*
- *Backup Airspeed indicator*
- *Backup Altimeter*
- *MCDS-2 Magnetic Compass*
- *Garmin SL40 transceiver*
- *PS Engineering PM3000 intercom*
- *Garmin GTX327 transponder*
- *King AK451 ELT*
- *AirGizmos, Garmin 695 GPS*
- *Antennas*
- *G -205 trim control and PTT on the control sticks*
- *Trims and flaps electrically actuated*
- *Kuntzleman wing tips strobe/nav. lights*
- *Landing light in cowl*
- *Adjustable pedals*
- *Dual hydraulic brakes*
- *Parking brake*
- *Wheel fairings tricycle*
- *Cabin heating*
- *Carburetor preheating*
- *Leather upholstery*
- *Paint*
- *Sunshade*

2011-02-09

7. DESCRIPTION OF AIRPLANE AND SYSTEMS

7.4 Instrument panel

Instrument panel layout of *PiperSport* aircraft S/N: *P1001085*



Description of instrumentation and controls in the cockpit

1	<i>Parking brake</i>	14	<i>PTT / elevator trim / aileron trim buttons</i>
2	<i>Switches / Circuit breakers*</i>	15	<i>Ignition switch</i>
3	<i>Transponder</i>	16	<i>Transceiver</i>
4	<i>Dynon EFIS</i>	17	<i>Flaps control switch</i>
5	<i>EMS warning light</i>	18	<i>Flaps position indicator</i>
6	<i>Backup Airspeed indicator</i>	19	<i>Throttle</i>
7	<i>Backup Altimeter</i>	20	<i>Choke</i>
8	<i>Magnetic compass</i>	21	<i>Fuel selector valve</i>
9	<i>GPS</i>	22	<i>Socket 12V</i>
10	<i>PS Engineering Intercom</i>	23	<i>Carburetors preheating</i>
11	<i>Dynon EMS</i>	24	<i>Cabin heating</i>
12	<i>ELT control unit and buzzer</i>	25	<i>Flaps control switch</i>
13	<i>Circuit breakers *</i>		

* Switches and circuit breakers detailed description is in this Supplement, page 10 of 14.

Instruments and Avionics

- *Dynon D100 EFIS*
- *Dynon D120 EMS*
- *Backup Airspeed indicator*
- *Backup Altimeter*
- *MCDS-2 Magnetic Compass*
- *Garmin SL40 transceiver*
- *PS Engineering PM3000 intercom*
- *Garmin GTX327 transponder*
- *King AK451 ELT*
- *AirGizmos, Garmin 695 GPS*
- *Antennas*

NOTE

For instrument and avionics operating instructions refer to the documentation supplied with the instruments and avionics.

Miscellaneous equipment

- *G -205 trim control and PTT on the control sticks*
- *Trims and flaps electrically actuated*
- *Kuntzleman wing tip strobe/nav. lights*
- *Landing light in cowl*
- *Adjustable pedals*
- *Dual hydraulic brakes*
- *Parking brake*
- *Wheel fairings tricycle*
- *Cabin heating*
- *Carburetor preheating*
- *Leather upholstery*
- *Paint*
- *Sunshade*

Description of switches and circuit breakers

LEFT PART OF INSTRUMENT PANEL	MASTER		circuit breaker	25A
	INSTR.	<i>engine instruments</i>	switch	-
	AVIONICS		switch	-
	STROBE		circuit breaker	10A
	NAV.L.	<i>navigation lights</i>	circuit breaker	5A
	LDG. L.	<i>landing light</i>	circuit breaker	5A
	FUEL P.	<i>fuel pump</i>	circuit breaker	5A
RIGHT PART OF INSTRUMENT PANEL	PWR	<i>power (generator)</i>	circuit breaker	20A
	EMS		circuit breaker	2A
	EFIS		circuit breaker	3A
	COMM	<i>transceiver</i>	circuit breaker	5A
	IC	<i>intercom</i>	circuit breaker	1A
	XPDR	<i>transponder</i>	circuit breaker	5A
	GPS		circuit breaker	3A
	FLAPS		circuit breaker	5A
	12 V	<i>socket 12V</i>	circuit breaker	7A
	TRIM		circuit breaker	1A

8. HANDLING AND SERVICING

8.5 *Servicing operating fluids*

8.5.2 Approved oil grades and specifications

Type of oil used by aircrafts manufacturer:

AeroShell Oil Sport Plus 4

SAE: 10W-40 API: SL

8.5.3 Approved coolant grades and specifications

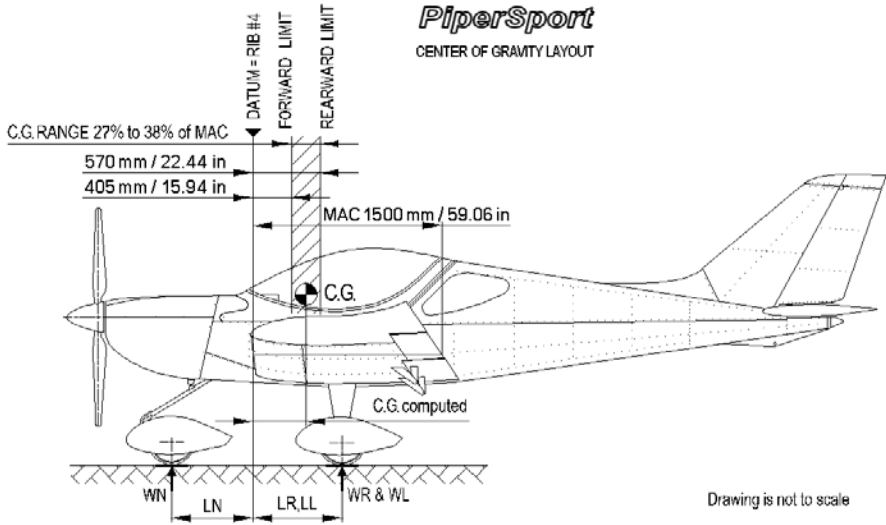
Type of coolant used by aircrafts manufacturer:

Specification: ASTM D 3306, VW TL 774C

Mixture ratio coolant / water: 50/50 [%]

Max. coolant temperature: 120 [°C] (248 [°F])

Blank form of Weight & Balance record



Drawing is not to scale

AIRCRAFT EMPTY C.G.	ITEM	WEIGHT [kg/lb]	ARM [mm/in]	MOMENT (WEIGHT x ARM)
	RIGHT MAIN WHEEL	$W_{R=}$	$L_{R=}$	
	LEFT MAIN WHEEL	$W_{L=}$	$L_{L=}$	
	NOSE WHEEL	$W_{N=}$	$L_{N=}$ - negative arm	-
COMPUTED C.G. EMPTY	Empty weight: $W_{E=}$ [kg/lb]	C.G. = [mm/in] % MAC	Aircraft moment: $M_{E=}$	

NOTE:

EMPTY WEIGHT INCLUDING OIL, COOLANT AND HYDRAULIC FLUID.

MAXIMUM FUEL QUANTITY IN WING TANKS (82.1KG=114L / 180.62LB=30.1US GAL) IS USED FOR MOST FORWARD C.G. CALCULATION.

MINIMUM FUEL QUANTITY IN WING TANKS FOR 30 MINUTES FLIGHT (10.1KG=14L / 22.2LB=3.7US GAL) IS SUBTRACTED FROM MTOW (600KG / 1,320LB). MOST REARWARD C.G. CALCULATION IS DONE WITH ZERO FUEL QUANTITY (AFTER FUEL DEPLETION).

AIRCRAFT C.G.	WEIGHT [kg/lb]	ARM [mm/in]	MOMENT (WEIGHTxARM)
EMPTY AIRCRAFT		-----	
PILOT		700 / 27.56	
PASSENGER		700 / 27.56	
BAGGAGE COMPARTMENT - A		1,310 / 51.58	
BAGGAGE COMPARTMENT - B		1,800 / 70.87	
WING LOCKERS		600 / 23.62	
FUEL TANKS		180 / 7.09	
TOTAL	W_T=		M_T=
TAKEOFF WEIGHT	[kg/lb]		C.G.= [mm/in] [%] MAC

Max. takeoff weight : 600 [kg] (1,320 [lb])

Max. weight in baggage compartment A+B : 18 [kg] (40 [lb])

Max. weight in wing lockers together : 40 [kg] (88 [lb])

Empty weight C.G. range : 420 to 480 [mm] (16.54 to 18.90 [in]) / 28 to 32 [%] of MAC

Operating C.G. range : 405 to 570 [mm] (15.94 to 22.44 [in]) / 27 to 38 [%] of MAC

Maximum useful weight:

$$W_{Max. Useful} = W_{Max. Takeoff} - W_E$$

$$W_{Max. Useful} = 600 [kg] (1,320 [lb]) - \quad = \underline{\quad} [kg]/[lb]$$

This useful weight must be never exceeded!

NOTE: MAXIMUM USEFUL WEIGHT INCLUDING PILOT, PASSENGER, BAGGAGE AND FUEL.

$$\text{Aircraft C.G.} = \frac{M_E (M_T)}{W_E (W_T)} [mm/in] \times \frac{100}{MAC} [%]$$

Registration:
Serial No.:
Date:
By:

Blank form of Permitted payload range

PiperSport			Serial No. :				
F U E L	gauges together		for 30 min flight	1 / 4	1 / 2	3 / 4	1
	volume	liter	14	28.5	57	85.5	114
		US gal	3.7	7.5	15.1	22.6	30.1
	weight	kg	10.1	20.5	41	61.6	82.1
lb		22.2	45.1	90.3	135.4	180.6	
			Permitted crew weight				
B A G G E A G E S	No baggage	kg					
		lb					
	½ rear (A) 9 [kg] (20 [lb])	kg					
		lb					
	rear (A) 18 [kg] (40 [lb])	kg					
		lb					
	½ wing lockers 20 [kg] (44 [lb])	kg					
		lb					
	½ rear (A) + ½ wing lockers 29 [kg] (64 [lb])	kg					
		lb					
	rear (A) + ½ wing lockers 38 [kg] (84 [lb])	kg					
		lb					
	wing lockers 40 [kg] (88 [lb])	kg					
		lb					
	½ rear (A) + wing lockers 49 [kg] (108 [lb])	kg					
		lb					
rear (A) + wing lockers 58 [kg] (128 [lb])	kg						
	lb						
Crew weight = Max. Takeoff weight - Empty weight - Baggage weight - Fuel weight							

Crew weight values must be determined with regard on rearward C.G. limit.
Max. takeoff weight : 600 [kg] (1,320 [lb])

Intentionally left blank