SKYLANE v.5

PILOT'S OPERATING HANDBOOK

AND

MAINTENANCE MANUAL

ROTAX
AIRCRAFT ENGINES

SKYLANE ROTAX 912UL

PILOT'S OPERATING HANDBOOK

SE – VOF

Serial Number: **71Sw014C01r5v**

The aircraft must be operated in accordance with the information
and limitations contained in this manual.

LOG OF REVISIONS

All revisions of this handbook, with the exception of updated weight and balance information, should be recorded in the table below.

Revised pages will be marked by a vertical line on each affected page. In addition, the date of each revision will be printed in the lower page corner.

Revision Number	Revised Chapter	Revised page numbers	Description of revision or discussion of reasons for change	Approved date	Signature

TABLE OF CONTENTS

1 GENERAL INFORMATION

SKYLANE v.5 belongs to the category of ultra-light aircraft as defined by the Czech Civilian Aviation Regulations (specifically described in the Regulations as a Sport Flying Device). As of the date of the manufacture, the aircraft meets the standard set forth by the Amateur Aviation Association of the Czech Republic which, under the Czech law, is responsible for overseeing this category of aircraft.

The aircraft was assigned the following Type certificate: LAA CZ serial number ULL – 04/2009

1.1 NOTES

It is the responsibility of the pilot/operator of the Skylane v.5 aircraft to be familiar with the contents of this flight manual and any relevant supplements. The manual provides the information necessary for the safe operation, handling and maintenance of the aircraft, including operating instructions for the engine, propeller as well as the ballistic recovery system.

The aircraft is intended for sport and recreational aviation and meets the requirements of the Czech UL-2 standard. All commercial operations, with the exception of pilot training, are prohibited.

The aircraft is not equipped with a certified aviation engine or accessories. The pilot should therefore carefully select the course and altitude of each flight so that a safe emergency landing can be made in the event of an engine failure.

ATTENTION

This ultra-light aircraft has not been certified by the Czech Civilian Aviation Authority. All operators of this aircraft assume full responsibility for the safety of their operations.

1.2 WARNINGS, CAUTIONS, NOTES

The following definitions apply to Warnings, Cautions and Notes:

WARNING

OPERATING PROCEDURES, TECHNIQUES, ETC WHICH COULD RESULT IN PERSONAL INJURY OR DEATH IF NOT CAREFULLY FOLLOWED

CAUTION

OPERATING PROCEDURES, TECHNIQUES, ETC WHICH COULD RESULT IN DAMAGE TO EQUIPMENT IF NOT FOLLOWED

NOTES

An operating procedure which is considered essential to emphasize

1.3 TECHNICAL DATA

Basic description

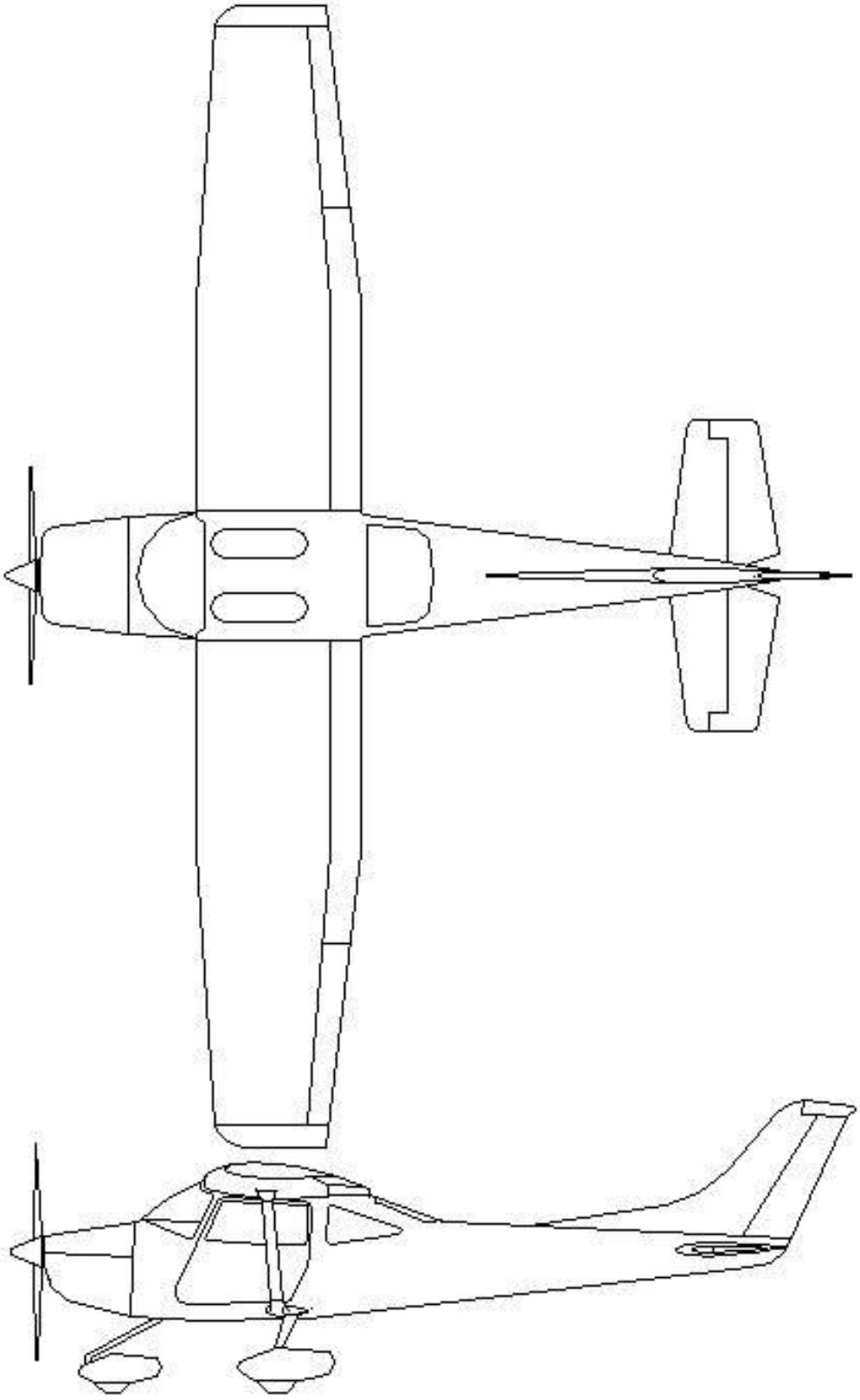
Skylane v.5 is a single-engine, cantilever high-wing two-seat aircraft with side-by-side seating. The fuselage, wings and the conventional tail surfaces are constructed from composite materials. Nose wheel of the tricycle landing gear is equipped with a shock absorber; hydraulic brakes are installed on the main wheels. Fuel tanks are contained in the wings.

The cabin is accessible from either side.

Basic technical data

Wingspan	8.95 m
Length	6.65 m
Height	2.01 m
Cabin width	1.15 m
Wing area	10,57m^2
Wing aerodynamic thickness	7.6
Wing airfoil	MS-(1)-313
Wing depth – root	1.30 m
– tip	0,848m
Mean Aerodynamic Cord (MAC)	1,181m
Aileron length	1,423m
Aileron area	0,48m^2
Aileron deflection	up 20°, down 10°
Flaps (position)	0°, (1.) – 13°, (2.) – 30°, (3.) – 40°
Horizontal tail surface area	1,714 m^2
Horizontal tail surface span	2,448m
Elevator area	0.79 m^2
Elevator deflection – up	27°
– down	17°
Rudder area	1.08 m^2
Rudder height	1,086 m
Rudder deflection	+/- 30°
Landing gear	
Wheel track	2.11 m
Wheel base	1.29 m
Main gear size	360 x 115 mm
Nose wheel size	300 x 100mm
Fuel capacity (wing tank)	2 x 47 L
Usable amount of fuel	2 x 46 L

1.4 DRAWING OF THE AIRPLANE



2 OPERATING LIMITATIONS

2.1 INTRODUCTION

Chapter 2 contains operating limitations and placards which are essential for safe operation of the aircraft, its systems and accessories.

2.2 AIRSPEED LIMITATIONS

Airspeed		IAS (km/h) / (kt)	Notes
V_{NE}	Never exceed airspeed	**262 km/h / 142 kt**	Never exceed this airspeed.
V_{no}	Maximum structural cruising speed	**225 km/h / 122 kt**	Do not exceed this airspeed unless in smooth air and then only with caution
V_A	Maneuvering airspeed	**159 km/h / 86 kt**	Do not apply full or abrupt control deflections above this airspeed to avoid overstressing the aircraft.
V_{RA}	Maximum Rough air speed	**190 km/h / 102 kt**	Do not exceed this speed in very turbulent conditions.
V_{FE}	Maximum flap extended airspeed	**117 km/h / 63 kt**	Do not exceed this airspeed with flaps extended
V_{S0}	Stall speed	**62 km/h / 33 kt**	Stall speed in the landing configuration

2.3 POWERPLANT: ROTAX 912 UL

Serial number 6771228, year of manufacture: 2014

POWER SETTING	Power	RPM	Fuel flow
	(HP)	(min-1)	(l/hour)
Max take-off [MT] (max 5 min.)	80	5800	24.0
Max continuous[MC]	70	5500	18.5
Cruise 90 % [MC]	63	5300	17.0
80 % [MC]	56	5200	16.0
75 % [MC]	51	5000	15.0
70 % [MC]	49	4900	14.0
65 % [MC]	44	4800	13.2
60 % [MC]	42	4700	12.5
50 % [MC]	36	4500	11.5
	----	--1400--	----

For additional details, see the Engine Operating Manual

2.4 WEIGHT LIMITS

Maximum weight (without the ballistic recovery system) ..... 450 kg
Maximum weight (with the ballistic recover system) 472.5kg
Basic empty weight ..... 275.9 kg
Useful weight ..... 196,6 kg
Minimum loaded weight ..... 70 kg
Maximum weight in the baggage compartment ..... 30 kg

2.5 BALANCE LIMITS

Permissible Center of Gravity (C-G) envelope (in flight)

Forward C-G limit ..... 25 % MAC (Mean Aerodynamic Chord)
Rear C-G limit ..... 36 % MAC
For calculations, see chapter 6.

2.6 APPROVED MANEUVERS

The following maneuvers are authorized (in addition to maneuvers incidental to normal flying operations):

- Steep turns up to maximum bank angle of 60°
- Climbs and descents with maximum deck angle of +/-30°.

WARNING

AEROBATICS, INTENTIONAL SPINS AND WHIP STALLS ARE PROHIBTED

2.7 LOAD LIMITS

Maximum positive load limit ..... + 4.0 g
Maximum negative load limit ..... - 2.0 g

2.8 CREW

Number of seats: 2
Minimum crew weight: 1 pilot 70 kg(pilot + others loads)
Minimum required crew: 1 pilot seated in the left seat

Maximum crew weight in relation to the fuel weight on board – see 2.9 and 6.3

2.9 TYPE OF OPERATIONS

The aircraft is intended only for operations conducted in accordance with day Visual Flight Rules (VFR). For additional requirements, consult the applicable national Aviation Regulations.

WARNING

NIGHT VFR FLIGHT IS NOT AUTHORIZED. FLIGHT INTO INSTRUMENT METERIOLOGICAL CONDITIONS OR INTO KNOWN ICING CONDITIONS IS PROHIBITED

2.10 FUEL SPECIFICATIONS

- EUROSUPER RON 95 lead-free gasoline or equivalent which meets the EN 228 or DIN 51607 specifications (e.g., **BA 95 Natural**)
- AVGAS 100 LL or AVGAS 100/130

2.11 OTHER LIMITATIONS

- Smoking on-board the aircraft is prohibited

2.12 PLACARDS

MANUFACTURER'S PLATE
REGISTRATION: SE – VOF
Manufacturer: AirLony
Model: SKYLANE v.5
Serial Number/Year of manufacture: 71Sw014C01r5v / 2014
Empty Weight: 275,9 kg
Max. Take-off weight: 472,5 kg

THIS AIRCRAFT HAS NOT BEEN CERTIFIED BY THE CZECH CIVIL AVIATION AUTHORITY

OPERATOR OF THIS AIRCRAFT ASSUMES FULL RESPONSIBILITY FOR THE SAFETY OF ALL OPERATIONS

INTENTIONAL SPINS, WHIP STALLS AND AEROBATICS ARE PROHIBITED

MAXIMUM CREW WEIGHT /KG/

IN RELATION TO FUEL AND BAGGAGE

Fuel on board →	**Indicated Fuel level** →	Full	3/4	1/2	1/4	30 min of flight
	FUEL AMOUNT (L)	**98**	**73**	**49**	**24**	**5**
Baggage weight →	**MAX: 30 KG**	**97**	**115**	**132**	**149**	
	½ : 15 kg	**112**	**130**	**147**	**164**	
	NO BAGGAGE	**127**	**145**	**162**	**179**	

OPERATING DATA AND LIMITATIONS		
REGISTRATION:	**SE – VOF**	
EMPTY WEIGHT:		**275,9 kg**
MAX. TAKE-OFF WEIGHT:		**472.5 kg**
MAX. USEFUL WEIGHT:		**196.6 kg**
Max. Baggage weight:		**30 kg**
Min. loaded weight:		**70 kg**
Never Exceed Airspeed V_{NE}:		**142 kt (IAS)**
Stall speed in the landing configuration V_{SO}:		**33 kt (IAS)**
Speed for best glide ratio (1:13):		**60 - 65 kt (IAS)**
Speed for steepest climb Vx: 51 - 54 kt	**Speed for best climb Vy: 62 - 65 kt**	

2.13 CALIBRATED AIRSPEED CORRECTIONS (KNOTS)

	Cruise configuration flaps retracted, gear down	**Take-off configuration** flaps in take-off position,, gear down	**Landing configuration** flaps in landing position, gear down
IAS [kt]	**CAS [kt]**		
32.4	**35.6**		
43.2	**45.4**		
54	**54.5**		
64.8	**65.3**		
75.6	**75.6**		
86.4	**85.9**		
97.2	**96.7**		
108	**106.4**		
118.8	**117.2**		
129.6	**126.9**		
140.4	**137.7**		

3 EMERGENCY PROCEDURES

This chapter describes the most common emergency situations and the associated procedures. Not all possible emergency situations can be enumerated here; the operator must apply his judgment, experience and information in this manual to resolve a specific emergency situation

3.1 ENGINE FAILURE

1. Elevator ..... PITCH FOR BEST GLIDE AIRSPEED
2. Airspeed ..... 60 – 65 kt
3. Execute emergency landing away from obstacles.

3.2 ENGINE FIRE

3.2.1 ENGINE FIRE ON THE GROUND

1. Fuel valve ..... CLOSE.
2. Ignition, master switch ..... TURN-OFF.
3. Quickly exit the aircraft and extinguish the fire. If possible, call for help.

3.2.2 IN-FLIGHT ENGINE FIRE

7 Cabin Heating: ..... OFF
8 Fuel Valve ..... CLOSE
9 Throttle: ..... FULL
10 Ignition: ..... OFF(after exhausting any fuel left in the carburetor)
11 Master Switch: ..... OFF.
12 DO NOT ATTEMP TO RE-START THE ENGINE
13 EXECUTE EMERGENCY LANDING.

3.3 EMERGENCY LANDING

1. Airspeed (pitch for best glide) ..... 60 – 65 kt
2. Fuel valve ..... CLOSE
3. Ignition ..... OFF
4. Seat belts ..... SECURE
5. Land away from obstacles, use flaps as necessary

3.4 UNINTENTIONAL SPIN RECOVERY

1. Throttle ..... IDLE
2. Rudder ..... NEUTRAL
3. Elevator ..... NEUTRAL

3.5 EXCESSIVE VIBRATION

In case of excessive in-flight vibrations, follow the following procedure:

1. Find engine RPM which minimize vibrations
2. Land at the nearest available airport or execute a precautionary off-airport landing. If vibrations increase, turn engine off and execute emergency landing

3.6 USE OF THE BALLISTIC RECOVERY SYSTEM

(Applies only to aircraft equipped with the recovery system)

1. Airspeed (pitch for best glide) ..... 60 – 65 kt
2. Fuel Valve ..... CLOSED
3. Ignition, Master switch ..... OFF
4. Seat belts ..... TIGHTEN
5. Pull the emergency system handle

IN CASE OF EMERGENCY, SKIP STEPS 1 - 4

4. NORMAL PROCEDURES

4.1 PRE-FLIGHT INSPECTION

The pre-flight inspection should be conducted at a minimum before the first flight of each day or following any maintenance work on the airplane. Incomplete or care-free pre-flight inspection could result in an accident. The preflight inspection should be conducted using the checklist contained in this chapter.

NOTE

The phrase „check condition" refers to a visual check of the surface condition, checking for damage, deformations, scratches, dents, corrosions or presence of other irregularities which may negatively affect safety of flight.

①	– ignition - OFF – master switch - OFF – avionics - CHECK – fuel - CHECK AMOUNT – controls - FREE AND CORRECT (STOP TO STOP) - CHECK FLAPS – doors - CHECK CONDITION OF HINGES, CLEANLINESS – CHECK FOR LOOSE OBJECTS IN THE COCKPIT
②	– Engine cowling: CHECK CONDITION – propeller: CHECK CONDITION – engine mount and exhaust: CHECK CONDITION – Oil: CHECK AMOUNT – Cooling fluid: CHECK AMOUNT – Fuel and electric systems: VISUAL INSPECTION – Fuel filter: VISUAL INPSECTION – ANY OTHER STEP RECOMMENDED BY THE ENGINE MANUFACTURER
③	– Wing (Surface and leading edge): CHECK CONDITION – Pitot tube: CHECK CONDITION
④	– Wing Tip - CHECK CONDITION AND ATTACHMENT – Aileron: - CHECK CONDITION, LOOK FOR EXCESSIVE PLAY AND SMOOTHNESS OF OPERATION – Flaps: - CHECK CONDITION, LOOK FOR EXCESSIVE PLAY AND SMOOTHNESS OF OPERATION
⑤	– Landing gear: - CHECK WHEEL ATTACHMENT POINTS, CHECK BRAKES, CONDITION AND TYRE PRESSURE – Airplane underside: - CHECK CONDITION
⑥	– Tail surfaces – CHECK OVERALL CONDITION, ATTACHMENTS POINTS, CHECKP FOR EXCESSIVE PLAY AND SMOOTHNESS OF OPERATION, CHECK CONTROL STOPS

4.2 NORMAL PROCEDURES AND CHECKLISTS

4.2.1 BEFORE STARTING ENGINE

1	Seat belts	FASTEN AND TIGHTEN
2	Cabin doors	CLOSE AND SECURE
3	Engine Instruments	ON
4	Fuel Valve	OPEN (use fuller tank)
5	Fuel On-board	CHECK

4.2.2 ENGINE STARTING

1	Master switch	ON
2	Magnetos	ON
3	Choke	ON (cold engine start)
4	Brakes	ON – CHECK FUNCTION (or use wheel chocks)
5	Elevator	PULL (FULL DEFLECTION)
6	Throttle	IDLE (SLIGHTLY MORE THAN IDLE)
7	Propeller	CLEAR
8	Starter	ENGAGE (release once engine starts)
9	Throttle	2500 RPM
10	Oil pressure	CHECK (MIN 1.5 bar)
11	Choke	CLOSE
12	Ampmeter/Voltmeter	CHECK
13	Avionics	ON

Caution: 1) If oil pressure does not rise to 1.5 Bar within 5 seconds of engine start, turn the engine off to prevent damage and diagnose the source of the problem.

2) The starter should not be engaged for more than 10 seconds. After each 10 second period, 1 minute cooling period is necessary to prevent starter overheating

3) Before starting the engine, ensure that all avionics (XPD, GPS, and INTERCOM) are off to prevent damage due to stray currents.

Note: Fuel valve is open when the fuel valve handle is in the horizontal position; the valve is closed when the handle is in the UP position.

4.2.3 ENGINE WARMUP AND RUNUP

Engine Run-up

Follow the instructions in your Engine Manual. Before take-off, all engine parameters must be in their normal operating range.

Engine should be warmed up at 2000 – 2500 RPM.

1	Indications for engine run-up	Oil pressure: 2 – 5 bar Oil Temperature: 50 – 140° C Coolant temperature: max. 120° C Exhaust Gas Temperature: max. 880°C Cylinder Head Temperature: 50 - 150°C
2	RPM	4000 RPM
3	Magneto check (applicable only to engines with dual magnetos)	Ground the Right and Left Magneto and return to both: • MAX. RPM DROP: 300 RPM • MAX. DIFFERENCE: 120 RPM
4	Engine acceleration	From idle to full power: 2-3 seconds
5	Full power RPM	5800 RPM
6	Idle power RPM	min: 1400 RPM

Caution**:**

1) Position the aircraft so that the engine run-up is conducted facing into the wind.
2) The wheels should be secured using chocks.
3) Minimize engine operation on one magneto.
4) Do not conduct the engine run-up over loose terrain or gravel to prevent propeller damage.
5) To minimize engine vibrations, maintain engine RPM over 2000 RPM

NOTE

During cold temperature operations, the radiator can be partially covered to ensure engine operation within normal operating limits.

4.2.4 TAXI

1	Chocks	REMOVE
2	Throttle	As needed (max taxi speed of 10 KM/H)
3	Breaks	CHECK (Momentarily apply)
4	Yoke	PULL (maximum deflection)
5	Instruments	CHECK

Notes:
1) Use maximum taxi speed of 10 km/h and adjust as necessary for terrain conditions, obstacles and wind direction.
2) Use differential braking for directional control
3) Position the ailerons and elevators according to wind direction and speed

4.2.5 PRE TAKE-OFF CHECK

1	Aileron and elevators	FREE AND CORRECT
2	Rudders	FREE AND CORRECT
3	Trim	NEUTRAL
4	Flaps	Position 1 (TAKE-OFF)
5	Fuel	CHECK QUANTITY
6	Fuel Valve	OPEN (use fuller wing tank)
7	Master switch	ON
8	Magnetos	ON
9	Engine Instruments	CHECK
10	Altimeter, radios	SET
11	Seat belts	TIGHTEN
12	Doors	CLOSE AND SECURE
13	Emergency Ceckist	REPEAT

4.2.6 TAKE-OFF

1	Flight Hour Recorder	TURN ON
2	Throttle	SMOOTHLY ADVANCE TO FULL FORWARD.
3	Elevator	GENTLY PULL TO RAISE THE NOSE WHEEL
4	Unstick	AT 38 Kt BY SLIGHTLY PULLING ON THE YOKES

NOTE

Raise the nose wheel as early as practical during the take-off run.

4.2.7 CLIMB

1	Brakes	APPLY (to stop wheels from turning)
2	Throttle	FULL POWER (max 5 500 RPM)
3	Airspeed	52 – 54 Kt
4	Flaps	RETRACT UPON REACHING SAFE ALTITUDE OR CLEARING OF OBSTACLES (50m)
5	Airspeed	62 – 65 Kt
6	Trim	AS NEEDED

4.2.8 PATTERN ENTRY

1	Throttle	3700 RPM
2	Airspeed	approximately 73 Kt
3	Trim	AS NEEDED

4.2.9 DOWNWIND

1	Engine instruments	CHECK
2	Fuel	CHECK QUANTITY
3	Seatbelts	TIGHTEN

4.2.10 BASE LEG

1	Throttle	REDUCE AS NECESSARY
2	Airspeed	54 Kt
3	Flaps	Position 1 (TAKE-OFF)
4	Trim	AS NEEDED
5	Traffic	CHECK FOR TRAFFIC AHEAD

4.2.11 FINAL

1	Throttle	AS NEEDED TO MANAGE DESCENT RATE
2	Airspeed	48 Kt
3	Flaps	Position 2 (LANDING)
4	Trim	AS NEEDED

4.2.12 LANDING

1	Airspeed	43 - 46 Kt
2	Throttle	REDUCE ENGINE RPM TO IDLE WHEN 10 M ABOVE THE RUNWAY
3	Round-out	GRADUALLY PULL TO ARREST DESCENT AND TRANSITION INTO FLARE
4	Flare	MAINTAIN 0.5 M ABOVE GROUND BY GRADUALLY PULLING ON THE YOKE
5	Touchdown	MAIN WHEELS SHOULD TOUCHDOWN AT APPROXIMATELY 32 Kt
6	Landing run	ELEVATOR UP

NOTE:
1) Use only minimum brakes.
2) Wheel-barrowing (touching down on the nose wheel first) can damage the nose wheel and lead to loss of directional control
3) Upon touchdown, continue to pull on the yoke and gently lower the nose wheel.

4.2.13 AFTER LANDING

1	Flight hour recorder	STOP
2	Flaps	RETRACT
3	Trim	FULL BACK

4.2.14 EMERGENCY LANDING

1	Throttle	AS NEEDED
2	When landing is assured: FLAPS	Position 3 (LANDING)
3	Airspeed	43 - 46 Kt
4	Trim	AS NECESSARY

4.2.15 ENGINE SHUTDOWN

1	Fuel Valve	CLOSE
2	Avionics	OFF
3	Throttle	IDLE
4	Magnetos	OFF
5	Master switch	OFF

CAUTION: 1) ALL AVIONICS (RADIO, XPD, GPS AND INTERCOM) SHOULD BE TURNED OFF PRIOR TO ENGINE STOPPING TO PREVENT THEIR DAMAGE.

2) CLOSE FUEL VALVE PRIOR TO ENGINE SHUTDOWN.

4.2.16 AIRCRAFT PARKING AND SECURING

1	Magnetos	Check OFF
2	Master switch	Check OFF
3	Airplane tie-down	Secure

NOTES

Airplane should be tied down using anchor points under the wings, tail as well as the nose wheel. Always park the airplane into the wind. Make sure that cabin doors are closed. Canopy cover will minimize cabin overheating and maintain the windshield clean in between flights. Proper tie-down is critical since the aircraft has no parking brake

5 PERFORMANCE

5.1 ALTITUDE LOSS DURING STALL RECOVERY

Straight and level flight ..... 20 m
Turning flight (coordinated and 30° bank) ..... 25 m

5.2 CRUISE SPEEDS

Normal cruise speed ..... 65 – 108 kt
Max. cruise speed ..... 119 kt
(Max. engine RPM: 5 500)
Optimal cruise speed ..... 76 – 97 kt
Economy cruise speed ..... 73 kt

5.3 STALL SPEEDS

With maximum flaps extended, V_{S0} ..... Pilot only 32 kt
Pilot + Passenger 33 kt

With flaps retracted, V_{S1} ..... Pilot only 37 kt
..... Pilot + Passenger 39 kt

5.4 CLIMB PERFORMANCE

Climb rate: Pilot only ..... 6 m/s (1165 ft/min)
Pilot + Passenger ..... 4.5 m/s (874 ft/min)

Ceiling Pilot only ..... 5500 m
Pilot + Passenger ..... 4500 m

5.5 TAKE-OFF DISTANCES

Take-off run: Pilot only ..... 85 m
Pilot + Passenger ..... 105 m
Distance to clear a 15 meter (50 ft) obstacle:
Pilot only ..... 220 m
Pilot + Passenger ..... 290 m

5.6 LANDING DISTANCES

Distance to clear a 15 meter (50 ft) obstacle
Pilot only ..... 280 m
Pilot + Passenger ..... 295 m
Landing run: Pilot only ..... 100 m
Pilot + Passenger ..... 150 m

5.7 ENDURANCE AND RANGE

Endurance: (73 kt, 4000 rpm, 8 l/hour, 96 l usable fuel, 4 l spare) ..12 hours
Range.....1552 km

5.8 WIND LIMITATIONS

Max demonstrated crosswind component .....19 kt

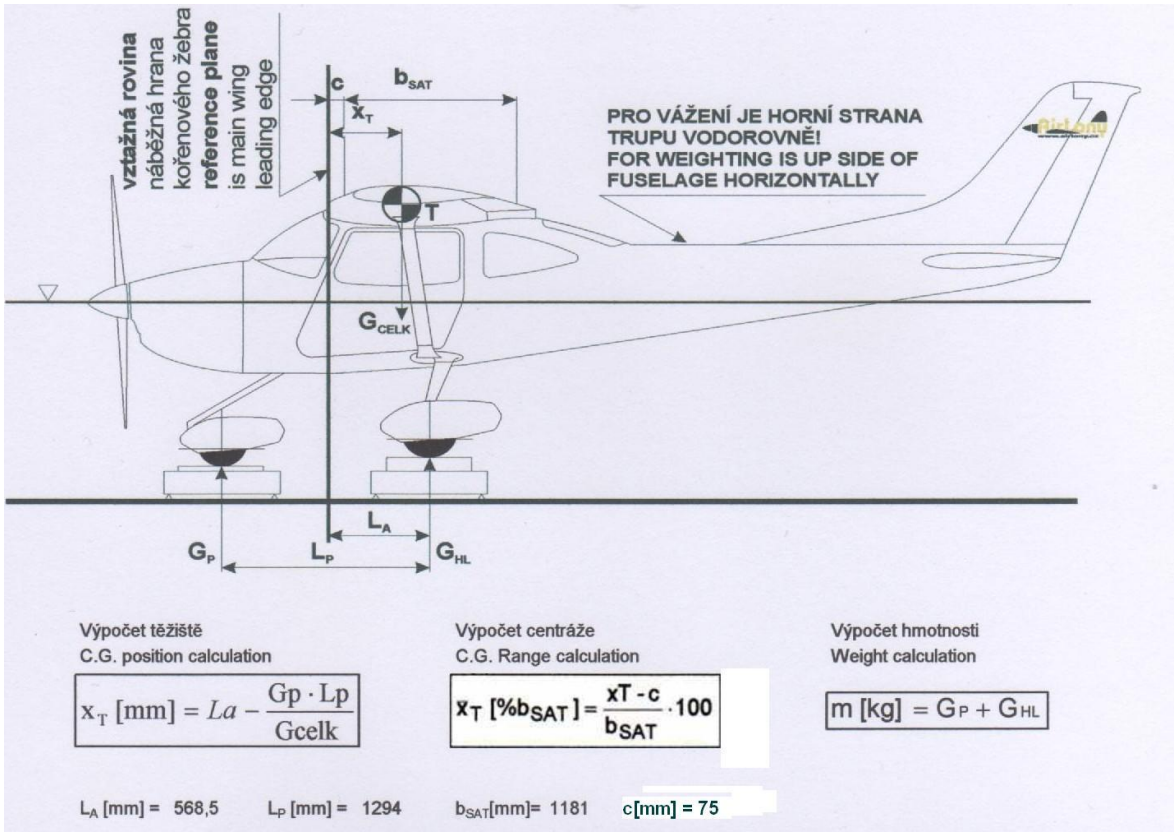
6. WEIGHT AND BALANCE

6.1 INTRODUCTION

The CG position is very important to a safe flight. This section contains information on how to calculate the CG position for each flight conditions.

6.2 EMPTY WEIGHT AND CENTER OF GRAVITY

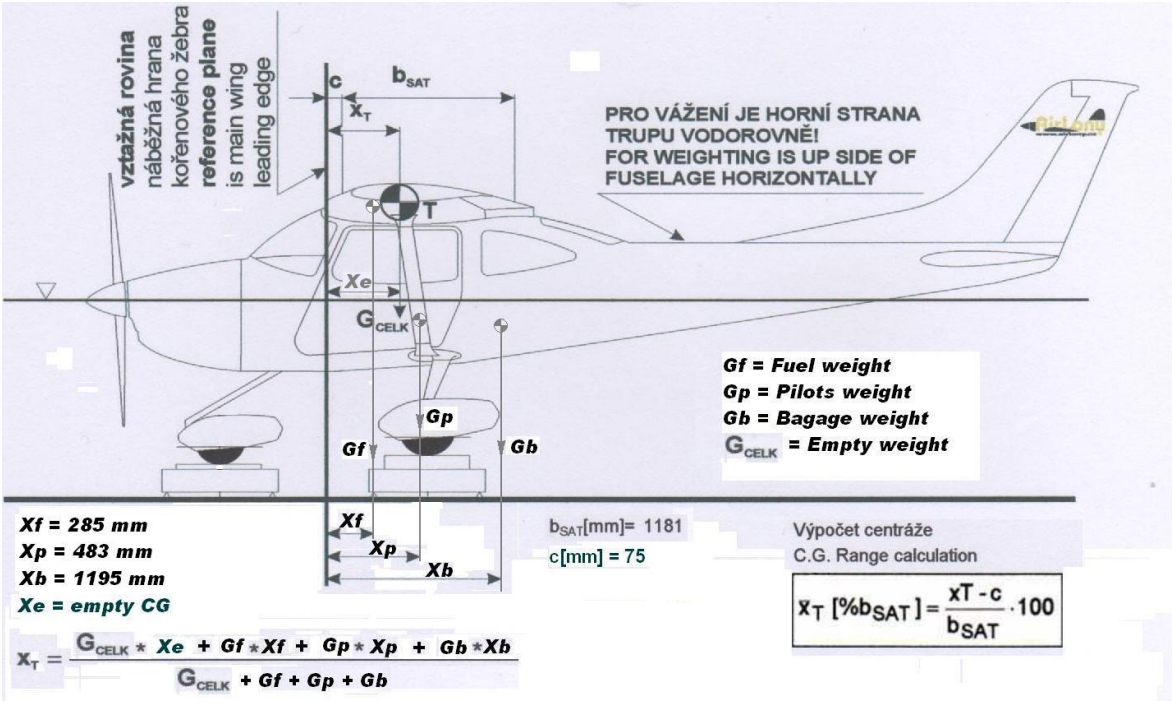
The empty weight is determined by weighing the aeroplane on 3 scales (one under each wheel. The horizontal level position shall be the top of the fuselage behind the rear window. (see picture below).



Center of gravity (C-G) range, empty aeroplane ..... 23 - 27% b_{SAT}
Forward C-G limit (from wing leading edge) ..... (23 % b_{SAT}) = 345 mm
Rear C-G limit (from wing leading edge) ..... (27 % b_{SAT}) = 395 mm

6.3 CENTER OF GRAVITY CALCULATIONS (for flight)

The pilot can calculate the CG position for each flight according to the information below:



Center of gravity (C-G) range in flight ..... 25 - 36% b_{SAT}
Forward C-G limit (from wing leading edge) ..... (25 % b_{SAT}) = 370 mm
Rear C-G limit (from wing leading edge) ..... (36 % b_{SAT}) = 500 mm

SE-VOF:
Empty weight (determined by weighing the aircraft) (G_{CELK}) ..... 275.9 kg
Center of gravity empty aeroplane (from wing leading edge) (Xe) ..... 343.4 mm

WARNING

THE PILOT IS RESPONSIBLE FOR OPERATING THE AIRCRAFT WITHIN THE WEIGHT AND BALANCE ENVELOPE!

7. AIRCRAFT AND SYSTEMS DESCRIPTION

7.1 INTRODUCTION

Skylane v.5 is a two seat, high wing aircraft, supported with a single strut, and equipped with a tricycle landing gear. The aircraft is constructed primarily from composite materials.

7.2 AIRFRAME

The fuselage is constructed as a composite sandwich monocoque. The fuselage contains a two seat cabin with side-by-side seating and baggage space behind the seats.
The wing is constructed from composite sandwich and a single beam forming the load-bearing structure. Fuel tanks are integrated into the wing behind the leading edge of the wing center section. The wing is equipped with Frise ailerons and single slot flaps.

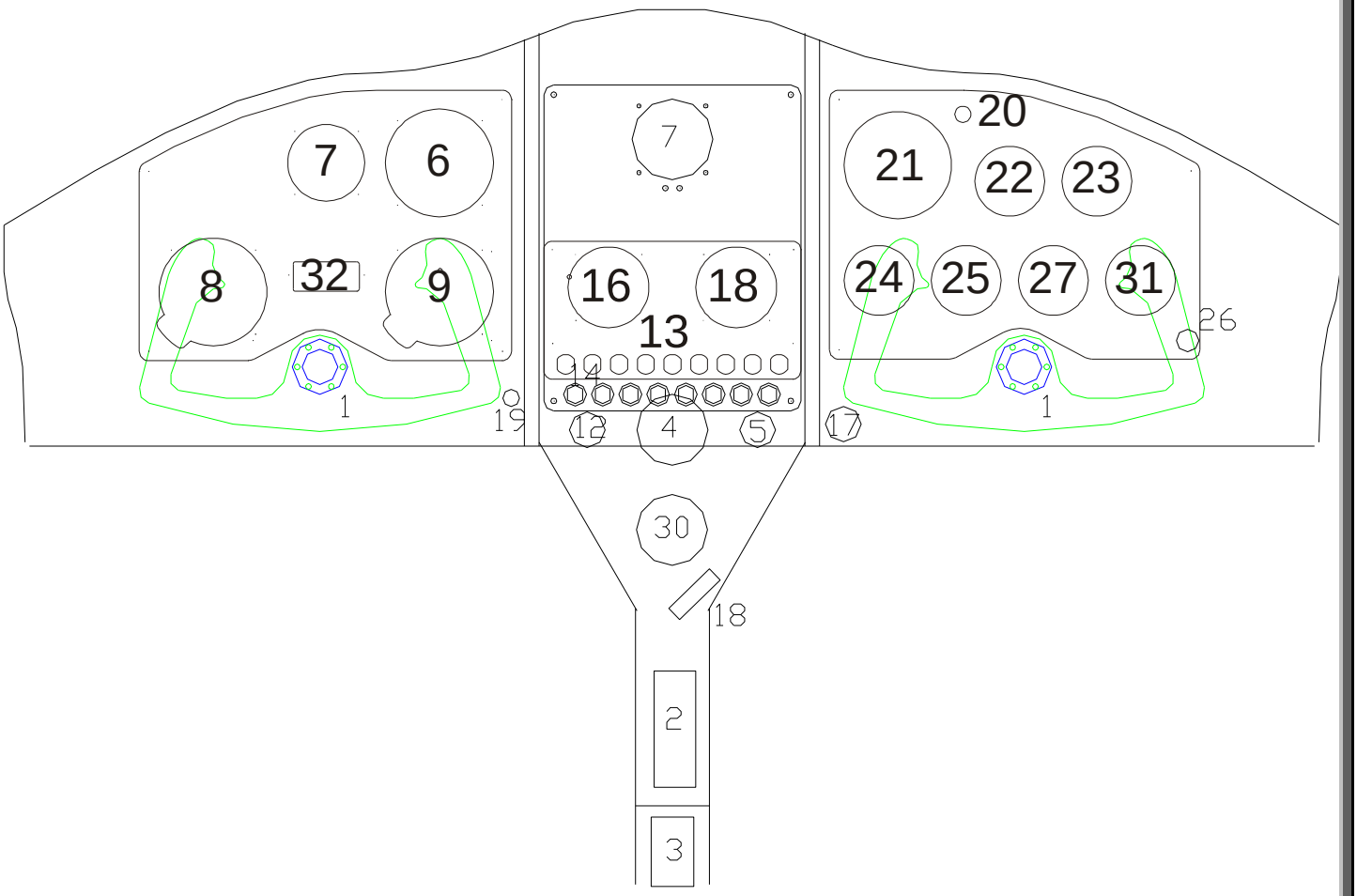
7.3 CONTROLS

The controls use a combination of cables and pushrods. Ailerons are actuated using pushrods. Flaps are actuated using cables operated by an electrical motor. Rudder is operated using cables while the elevator is actuated using pushrods. The trim is accomplished using a servo operated aerodynamic tab. The cabin contains dual controls (yokes and pedals).

The toe brakes are operated by pushing on pedals located on top of the rudder pedals.

7.4 THE INSTRUMENT PANEL

1. Yokes
2. Flaps
3. Trim
4. Throttle
5. Primer
6. Airspeed Indicator
7. Magnetic Compass
8. Altimeter
9. VSI
10. Turn and bank indicator
11. Flight hour recorder (Hobbs)
12. Magnetos
13. Electrical Switches
14. Fuses (1,3,3,5,5 Amp)
15. FLY DAT
16. NAVCOM
17. Cabin heat
18. Transponder
19. Master switch
20. Amp meter
21. Engine RPM
22. Oil Pressure
23. Fuel Pressure
24. Oil Temperature
25. Cylinder Head Temperature
26. External 12V plug
27. Manifold pressure
28. GPS, turn and bank, (beacon)
29. Fuel gauges
30. Main fuel valve
31. Voltage indicator
32. Inclinometer



7.5 LANDING GEAR

The tricycle landing gear uses composite spring for the main wheels and a steel spring to absorb shocks to the nose wheel. The main gear dimensions are 360x115 while the nose wheel's dimensions are 300x100. Both main wheels are equipped with hydraulic breaks and may be equipped with optional wheel pants.

7.6 SEATS AND SEATBELTS

The two seats are located side-by-side. Each seat is adjustable and is equipped with a four-point safety harness. Cabin interior is upholstered for greater pilot and passenger comfort.

7.7 BAGGAGE COMPARTMENT

The baggage compartment is located behind the seats and its maximum capacity is 30 kg. Please ensure that loaded baggage does not exceed applicable weight or balance limits. All baggage items must be securely fastened.

7.8 CABIN

The cabin can be accessed from either side. The windshield is made from a clear polyacrylate material. Before operating the aircraft, double check that both doors are properly latched. The doors can be equipped with an optional lock.

7.9 POWERPLANT

See the appropriate engine manual
(Standard aircraft engine is Rotax 912UL with Woodcomp Propuls AES propeller)

7.10 FUEL SYSTEM

Fuel system consists of two wing tanks, each with 49 liter capacity. Fuel is carried from the wing tanks to the carburetor as a result of gravity pressure and action of the engine-driven fuel pump. The main fuel valve is located on the lower part of the the instrument panel. The system also contains 2 fuel filters.

7.11 ELECTRICAL SYSTEM

The electrical system operates at 14 V and contains a 12 V / 8 Ah battery, located on the firewall.

7.12 PITOT-STATIC SYSTEM

Ram pressure port is located on the wing strut under the wing. Static pressure ports are located on fuselage sides. The static and dynamic pressures are transmitted via polyethylene hoses to the appropriate instruments. The pitot-static system feeds the following instruments: altimeter, airspeed indicator and vertical speed indicator.

7.13 OPTIONAL ACCESSORIES

The aircraft is equipped with an optional ballistic recovery system.

8. HANDLING, SERVICING AND MAINTENANCE

8.1 INTRODUCTION

This chapter contains the manufacturer-recommended procedures for aircraft operation and maintenance.

8.2 PERIODIC AIRCRAFT INSPECTIONS

The appropriate time period for airplane inspections and maintenance depends critically on the type of operation and overall condition of the aircraft. Use only original parts when replacing any airframe, engine or propeller components.

At a minimum, the aircraft should undergo the following periodic inspections:

a) After the first 25 flight hours
b) After each 50 flight hours
c) After each 100 flight hours or once per year, whichever comes first.

Engine maintenance procedures are specified by the engine manufacturer. Likewise, the propeller should be maintained in accordance with the manufacturer's recommendations (if the aircraft is used by multiple operators, the 50-hour check should be conducted every 25 hours)

8.3 CHECKLISTS FOR PERIODIC INSPECTIONS

8.3.1 CHECK AFTER THE FIRST 25 HOURS OR AFTER EACH 50 HOURS

Item Number	Description	Performed by	Checked by
1	**General** Inspect control cables for wear, check that all systems' components (fuel, oil and electrical) are securely attached Inspect for loose screws and rivets.		
2	**Controls** Inspect steel parts for corrosion and repair as necessary Lubricate all moving parts. Check that controls operate freely and in the correct sense		
4	**Landing gear** Inspect the nose wheel condition, including the shock absorber. Check for the range of rotation. Inspect the main gear, bearings and wheel pants.		
5	**Tires** Check air pressure, tire condition, wheel rims as well as the hydraulic breaks Replace the tire once the first ply becomes visible.		
6	**Engine** Inspect the engine compartment, propeller reduction unit, exhaust, fuel, oil and engine cooling systems as well as all hoses for any signs of wear, tear or leakage. Dismount and clean the carburetor float chamber Inspect the air filter and replace as necessary Other regular inspections are specific in the appropriate engine maintenance manual.		
7	**Exhaust system** Check for cracks, loose or missing parts.		
8	**Engine cowling** Check for cracks, looseness or damage. Inspect all fasteners.		
9	**Propeller** Inspect the overall propeller condition and especially the leading edge. Clean and polish the propeller as necessary.		
10	**Fuel system** Inspect all fuel system components for any leakage. Check that the fuel valve can be smoothly operated. Inspect all fuel filters and clean or repair as necessary.		

Item Number	Description	Performed by	Checked by
11	**Battery** Check electrolyte fluid level especially during hot days. The fluid level should be close to the upper mark; use only distilled water to refill the batter. Avoid spilling of the battery fluid, which can cause corrosion.		
12	**Cabin** Clean and protect using common house or automotive cleaners, appropriate to the upholstery materials. Use of water or soap solutions is not recommended as they may wash out the fire-retardant compounds contained in the upholstery materials.		
13	**Windshield** Use Pronto cleaner. Do not use gas (petrol), alcohol, acetone, benzene or other such compounds. Canopy cover protects the windshield from damage cause by dirt, sand or onlookers.		
14	**Cover/skins** Inspect the condition of the all skins and covers- check for rips, tears, de-lamination, breaks or push-through.		
15	**Composite parts** Inspect all composite parts for correct shape and dimensions. Note any cracks, damage, de-lamination, paint separation or change of shape.		
16	**Composite parts** Inspect the surface and check for correct shape and dimensions.		

8.3.2 CHECK AFTER EACH 100 HOURS OR ANNUAL INSPECTION

Item Number	Description	Performed by	Checked by
1	**General** Thoroughly clean the exterior and interior of the aircraft. Visually inspect for any signs of wear or corrosion.		
2	**The front-end of the aircraft** Inspect the engine and its compartment (use the engine manufacturer's procedures), controls, engine hoses, engine mount, propeller, battery, exhaust system, radiator, firewall, nose wheel and the wheel tire. Inspect all fasteners and tighten as necessary.		
3	**Fuel system** Inspect all hoses and lines for cracks. Check the operation of all fuel valves. Inspect fuel filters and clean or replace as necessary.		
4	**Fuselage** Inspect the surface and interior for any signs of de-lamination, incorrect repairs, cracks or deformation cause by overstress. Inspect the condition of the skids on the bottom of the fuselage		
5	**Controls** Check that the controls can be freely moved. Inspect the condition of all cable and pushrod guides and termini.		
6	**Instruments** Inspect the condition of all screws, fuses, placards, switches as well as the pitot-static system. Check the correct operation of all instruments.		
7	**Wing** Inspect the cover condition, integrity and correct shape/dimensions of all composite parts, leading and trailing edge, check for corrosion on metal parts and any deformation caused by overstress or incorrect operation. Remove inspection access covers and inspect all fasteners Inspect control stops and aileron-flap interconnection.		
8	**Empennage** Inspect the cover condition, integrity and correct shape/dimensions of all composite parts, leading and trailing edge, check for corrosion on metal parts and any deformation caused by overstress or incorrect operation. Inspect all fasteners, attachment to the fuselage, cable termini and trim tab. Inspect control stops.		
9	**Landing gear** Use the 25 hour checklist.		
10	Lubricate all moving parts - see the lubrication schedule below.		

Item Number	Description	Performed by	Checked by
11	Inspect the attachments of all control surface for play. If play exceeds 0.15 mm, replace the hinge/attachment.		

After completion of the inspection, or repair, re-mount all parts and perform an engine run-up check.

8.3.3 LUBRICATION SCHEDULE

a) Lubrication materials

- Use petroleum-jelly (Vaseline) with graphite

b) Lubricated spots

- All bearings
- Entire aileron control system (e.g., horns, pushrod ends) inside the fuselage
- Control torsion tube
- Elevator and trim tab (hinges and pushrods)
- Rudder (hinges)
- All bearings for the control system (inside the cabin)
- Pedals (3 bearings, cable ends, brake pedals)
- Trim tab hinges
- All cable ends (inside the fuselage)
- All throttle cable bearings
- Primer linkage
- Brakes
- All locks and cover bearings

c) Apply bearing grease to wheel bearings and all guides.

8.4 AIRCRAFT MODIFICATIONS OR REPAIRS

8.4.1 DAMAGE TO COMPOSITE PARTS

Repairs to composite parts can only be performed by the manufacturer, a person authorized by the factory or an authorized service station. The owner/operator can perform only non-structural repairs under the supervision of a mechanic with the appropriate Inspection Authorization (as specified by the applicable national Aviation Regulations).

CAUTION
AVOID DAMAGE TO THE INTERIOR STRUCTURE OF THE AIRCRAFT

8.5 GROUND MANIPULATION OF THE AIRCRAFT

Do not push on any control surfaces when moving the aircraft on the ground. The airplane can be pushed or pulled by the inner parts of the propeller. Use all necessary safety precautions when near the propeller arc.

8.6 RIGGING

Control Deflections

1. Ailerons		
	Up	20°+/-4
	Down	10°+/-2
2. Elevator		
	Up	27°+/-4
	Down	17°+/-2
3. Rudder		
	Left	30°+/-4
	Right	30°+/-4
4. Flaps	1. (take-off)	13°+/-2
	2. (normal landing)	30°+/-3
	3. (emergency landing)	40°+/-4

Aircraft Log

9 Regular maintenance log
10 Log of applicable manufacturer's service bulletins and mandatory directives
11 Daily flight log

9. Regular Maintenance Log

Log of regular maintenance, inspections, repairs, replacement of critical parts, etc			
Item (reason)	**Date**	**Airplane accumulated flight hours (hr)**	**Performed by**

9. Regular Maintenance Log

Log of regular maintenance, inspections, repairs, replacement of critical parts, etc			
Item (reason)	**Item (reason)**	**Item (reason)**	**Performed by**

9. Regular Maintenance Log

Log of regular maintenance, inspections, repairs, replacement of critical parts, etc			
Item (reason)	**Item (reason)**	**Item (reason)**	**Item (reason)**

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9. Regular Maintenance Log

Log of regular maintenance, inspections, repairs, replacement of critical parts, etc			
Item (reason)	**Item (reason)**	**Item (reason)**	**Item (reason)**

10. Log of applicable manufacturer's service bulletins and mandatory directives

Item Number	Bulleting Number	Date	Notes	Performed by

11. Daily flight log

Date	Location of take-off and landing	Crew	Day		Total		Notes (flight plan, squawks)
			Number of take offs	Flight time	Number of takeoffs	Flight Time	

11. Daily flight log

Date	Location of take-off and landing	Crew	Day		Total		Notes (flight plan, squawks)
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11. Daily flight log

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			Number of take offs	Flight time	Number of takeoffs	Flight Time	

Additional Notes: