

SportCruiser

Pilot's Operating Handbook



Airplane Registration Number:

Airplane Serial Number:

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***SportCruiser aircraft
is designed and manufactured by:***



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RECORD OF REVISIONS

No.	Affected pages	Revision name	Date of Issue	Signature

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LIST OF ABBREVIATIONS

ADI	Attitude direction indicator	
AGL	Above Ground Level	
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	(°C = (°F - 32) / 1.8)
CAS	Calibrated Airspeed	
CDI	Course deviation indicator	
C.G.	Center of Gravity	
CHT	Cylinder head temperature	
COMM	Communication transceiver	
EFIS	Electronic Flight Information System	
ELT	Emergency Locator Transmitter	
EMS	Engine Monitoring System	
°F	Temperature in degree of Fahrenheit	(°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	Airspeed in kilometers per hour	(1 km/h = 0.54 knots = 0.621 mph = 0.278 m/s)
knot	Airspeed in NM per hour	(1 knot = 1.151 mph = 1.852 km/h = 0.514 m/s)
KTAS	True Airspeed in Knots	
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	Airspeed in statute miles per hour	(1 mph = 0.87 knots = 1.61 km/h)

m/s	Vertical 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's Operating Handbook
psi	Pressure unit - pound per square inch (1 psi = 0.0689bar)
rpm	Revolutions per minute
s or sec	Second
SM	Statute Mile (1 SM = 1,609 m)
TAS	True Airspeed
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 _S	Stall speed with wing flaps in retracted position
V _{S1}	Stall speed with wing flaps in takeoff position
V _{SO}	Stall speed with wing flaps in extended position
V _X	Best angle of climb speed
V _Y	Best rate of climb speed

ASTM STANDARD

The *SportCruiser* 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 – 06

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

ASTM F 2295 – 06

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

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SECTION 1

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1. GENERAL INFORMATION

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1. GENERAL INFORMATION

This Pilot's Operating Handbook (POH) has been prepared to provide pilots with information for the safe and efficient operation of the *SportCruiser* aircraft and contains 9 sections. It also contains supplementary information considered to be important by the aircraft manufacturer.

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

NOTE

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

Warnings, Cautions and Notes

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

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

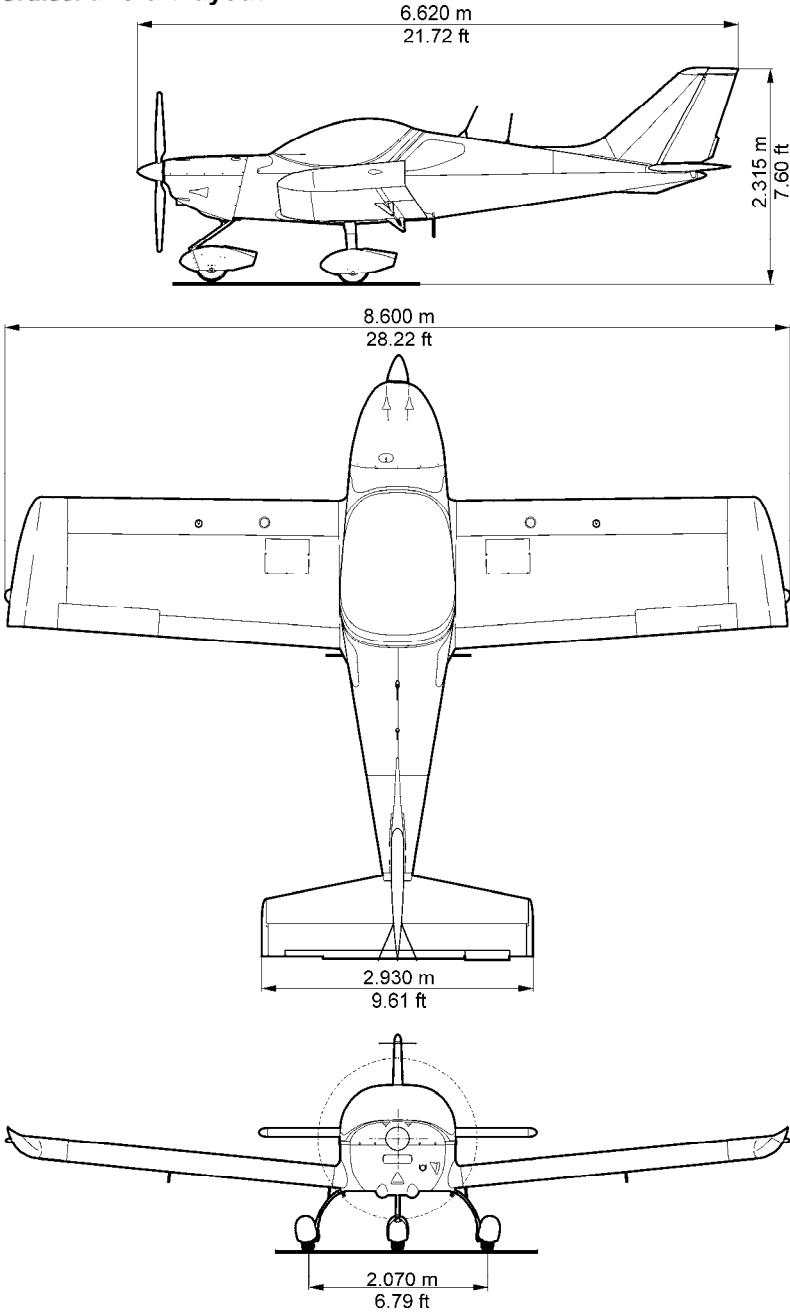
Draws attention to any special item not directly related to safety but which is important or unusual.

1.1 Airplane specification

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

SportCruiser 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.

SportCruiser aircraft layout:



Main airplane dimensions:

Wing span.....	28.22 ft
Length.....	21.72 ft
Height	7.6 ft
Wing area	132.3 sq ft
Wing loading.....	10 lb/sq ft
Cockpit width	46 in

Flight control surfaces travel:

Rudder.....	30°	±2° to each side
Elevator	+24° / -24°	±2°
Aileron	+15° / -15°	±1°
Flaps.....	0° to 30°	±1°
Aileron trim	+ 20° / -20°	±2°
Elevator trim	+ 22° / -28°	±2°
Anti-balance tab.....	+25° / -19°	±2°

Engine:

Manufacturer	BRP-Powertrain GmbH&Co.KG
Model number.....	912 ULS
Maximum power rating	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	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	1,320 lb
Max. weight of fuel	180 lb
Max. baggage weight in rear fuselage	40 lb
Max. baggage weight in each wing locker	22 lb
Empty weight (minimum equipment).....	760 lb

NOTE

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

Wing loading.....	10 lb/sq ft
Power loading	13.39 lb/hp

Speeds:

Maximum at sea level	119 KIAS
Cruise, 75% power at 3,000 ft	93 KIAS

Range and endurance:

Range	516 NM
Endurance	5:25 h:mm

Conditions:

Usable fuel.....	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*
Best angle of climb speed (v_x)56 *KIAS*
Best rate of climb speed (v_y).....62 *KIAS*

Stall speeds:

V_{S0} – flaps down, power - idle.....31 *KIAS*
 V_{S1} – flaps up, power - idle37 *KIAS*

Fuel:

Total fuel quantity30.12 *US gal*
Total usable fuel29.85 *US gal*
Approved types of fuelsee chapter 2.11

Engine power:

Maximum power at 5,800 *RPM*.....98.6 *hp*
Max. continuous power at 5,500 *RPM*.....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	Speeds value or range	Significance
	KIAS	
White arc	31-75	Flap Operating Range.
Green arc	38-108	Normal Operating Range.
Yellow arc	108-138	Maneuvers must be conducted with caution and only in smooth air.
Red line	138	Maximum speed for all operations.

2.2 Stalling speeds at maximum takeoff weight

Wing flaps position: - retracted (0°)
 - takeoff (12°)
 - landing (30°)

Conditions: Weight: MTOW Engine: idle	Wing flaps pos.	Stall speeds		Altitude loss at recovery ft
		KIAS	KCAS	
Wing level stall	0°	37	42	290
	12°	35	40	
	30°	31	37	
Coordinated turn 30° bank	0°	38	43	270
	12°	37	42	
	30°	30	36	

NOTE

Altitude losses shown in the table present max. values determined on the basis of flight tests using average piloting skill.

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

Flap operating range.....31 - 75 KIAS

2.4 Manoeuvring speed - V_A

Manoeuvring speed at 1,320 lb 88 KIAS

Manoeuvring speed at 900 lb 70 KIAS

2.5 Maximum structural cruising speed – V_{NO}

Maximum structural cruising speed 108 KIAS

2.6 Never exceed speed - V_{NE}

Never exceed speed..... 138 KIAS

2.7 Service ceiling

Service ceiling 14,378 ft

2.8 Load factors

Maximum positive limit load factor + 4 g

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

2.9 Approved manoeuvres

The *SportCruiser* is approved for normal and below listed manoeuvres:

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

2.10 Operating weights and loading

Max. takeoff weight.....	1,320 lb
Max landing weight.....	1,320 lb
Max. weight of fuel.....	180 lb
Max. baggage weight in rear fuselage	40 lb
Max. baggage weight in each wing locker	22 lb
Empty weight (minimum equipment).....	760 lb

NOTE

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

WARNING

Do not exceed maximum takeoff weight 1,320 lb.

Number of seats	2
Minimum crew (<i>only on the left seat</i>).....	1 pilot
Minimum crew weight	121 lb
Maximum crew weight on each seat.....	253 lb

2.11 Fuel

Fuel quantity:

Wing fuel tanks quantity.....	2x 15.06 US gal
Total fuel quantity	30.12 US gal
Unusable fuel.....	2x 0.13 US gal
Total usable fuel	29.85 US gal
Maximum allowable difference in fuel tanks.....	7.93 US gal

Recommended fuel type:

NOTE

Refer to the ROTAX Operator's Manual, section 10.2.2 Fuel, and 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:		BRP-Powertrain GmbH
Power	<i>Max. takeoff:</i>	98.6 hp at 5,800 rpm (max. 5 min.)
	<i>Max. continuous:</i>	92.5 hp at 5,500 rpm
	<i>Cruising (75%):</i>	68.4 hp at 5,000 rpm
Engine RPM	<i>Max. takeoff:</i>	5,800 rpm (max. 5 min.)
	<i>Max. continuous:</i>	5,500 rpm
	<i>Cruising (75%):</i>	5,000 rpm
	<i>Idling:</i>	1,400 rpm (minimum)
Oil pressure	<i>Minimum:</i>	12 psi below 3,500 rpm
	<i>Maximum:</i>	102 psi cold engine starting
	<i>Optimum:</i>	29 - 73 psi above 3,500 rpm
Oil temperature	<i>Minimum:</i>	122 °F
	<i>Maximum:</i>	266 °F
	<i>Optimum:</i>	194 - 230 °F
Cylinder head temp. (CHT)	<i>Minimum:</i>	122 °F
	<i>Maximum:</i>	275 °F
Exhaust gas temp. (EGT)	<i>Nominal:</i>	1,472 °F
	<i>Maximum:</i>	1,562 °F
	<i>Max. takeoff:</i>	1,616 °F
Fuel press.	<i>Minimum:</i>	2.2 psi
	<i>Maximum:</i>	5.8 psi

2.13 Engine instruments markings

Rotax 912 ULS 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	12 psi	12-29 psi	29-73 psi	73-102 psi	102 psi
Oil Temperature	122 °F	122-194 °F	194-230 °F	230-266 °F	266 °F
Cylinder Head Temperature (CHT)	-	-	122-275 °F	-	275 °F
Fuel Pressure	2.2 psi	-	2.2-5.8 psi	-	5.8 psi

2.14 Other limitations

- ***No smoking on board of the aircraft!***
- ***Approved for Day and Night 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)
 - 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

- ***Additional instruments and equipment list for Night VFR flights:***
 - Attitude indicator
 - Instrument lights
 - Position lights
 - Anti-collision light
 - Landing light

WARNING

IFR flights and intentional flights under icing conditions are PROHIBITED!

WARNING

Emergency parachute approved for up to MTOW 1,350 lbs and max. velocity 120 knots!

WARNING

Minimum 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 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}	31 kts

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

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

APPROVED FOR: DAY - NIGHT - VFR

**FOR AVIATION EMERGENCY USE ONLY
UNAUTHORIZED OPERATION PROHIBITED**

Operating limitation in baggage space

 **BAGGAGE COMPARTMENT** 
MAX. BAGGAGE WEIGHT: 18kg/40lbs

MAX. WEIGHT IN WING LOCKER: 10kg/22lbs

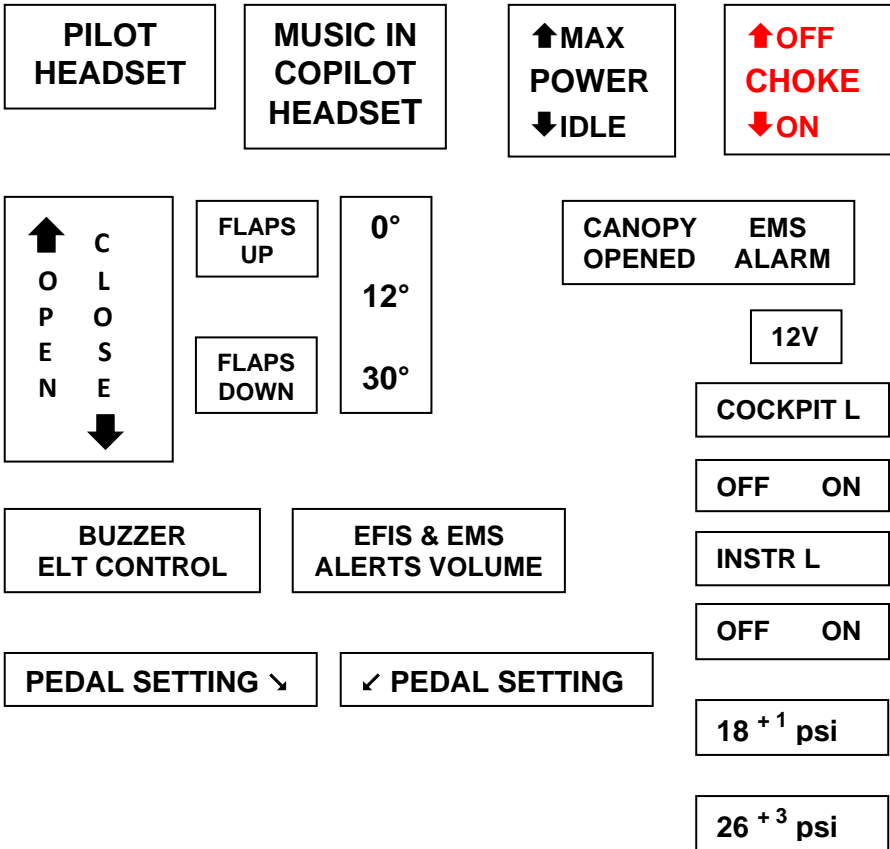
Passenger warning

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

Prohibited manoeuvres

**NO INTENTIONAL SPINS!
AEROBATICS PROHIBITED!**

2.16 Miscellaneous placards and markings



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

FUEL DRAIN ↘

**AEROSHELL OIL
SPORT PLUS 4**

CANOPY OPENED

CANOPY CLOSED

NO PUSH

NO STEP



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.

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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 KIAS
(flaps in T/O (12°) or retracted position (0°))

Maneuvering speed at 1,320 lb 88 KIAS
Maneuvering speed at 900 lb 70 KIAS
(flaps retracted (0°))

Gliding speed..... 60 KIAS
(flaps retracted (0°))

Precautionary landing with engine power 60 KIAS
(flaps in landing position (30°))

Emergency landing without engine power 60 KIAS
(flaps in landing position (30°))

Emergency descent..... 138 KIAS
(flaps retracted (0°))

3.3 Engine failure during takeoff run

1. THROTTLE - **IDLE**
2. Brakes - apply
3. Ignition Switch - **OFF**

3.4 Engine failure after takeoff

1. Airspeed - maintain 60 KIAS
2. Flaps - landing position (30°)
3. **FUEL** selector - **OFF**
4. Ignition Switch - **OFF**
5. **MASTER GEN** - OFF
6. **MASTER BAT** - OFF - *before landing*
7. Land straight ahead, turning only to avoid obstacles

NOTE

Altitude loss during 180° turn is approximately 400 ft.

3.5 Loss of engine power in flight

1. Airspeed - maintain 60 KIAS
2. Altitude - in accordance with actual altitude:
 - restart engine according to 3.6 or
 - search for a suitable place and perform emergency landing according to 3.9

3.6 In-flight engine starting

1. All unnecessary electrical equipment switch - OFF
2. **MASTER BAT** - ON
3. **ENG INSTR** - ON
4. **FUEL P** - ON
5. **FUEL** selector - **LEFT** or **RIGHT** (*to tank with more quantity of fuel*); check correct position - green mark (see Chapter 7.11)

- 6. THROTTLE - **IDLE**
- 7. Ignition Switch - hold **START**
after engine is starting - **BOTH**

After engine is running:

- 8. **MASTER GEN** - ON
- 9. **AVIONICS** - ON
- 10. **FUEL P** - OFF
- 11. Other switches - ON as necessary

3.7 Loss of oil pressure

- 1. Oil temperature - check

If oil temperature is rising:

- 2. THROTTLE - reduce power to minimum for flight
- 3. Land - as soon as possible

CAUTION

Be prepared for engine failure and emergency landing.

If oil temperature is normal:

- 2. Oil temperature - monitor
- 3. Oil pressure - monitor
- 4. Land - at nearest airfield

3.8 High oil pressure

- 1. THROTTLE - reduce power to minimum for flight
- 2. Oil pressure - monitor
- 3. Land - as soon as possible

3.9 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. Airspeed - maintain *60 KIAS*
2. Emergency landing area - chose suitable area without obstacles
3. COMM - giving location and intentions - if possible
4. Ignition Switch - **OFF**
5. **FUEL** selector - **OFF**
6. **MASTER GEN** - OFF
7. Approach - without steep turns
8. Safety harness - fasten
9. Flaps - landing position (*30°*)
10. **MASTER BAT** - OFF - *before landing*

3.10 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.
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. Safety harness - fasten
6. Perform approach at increased idling with flaps in landing position (*30°*) at *60 KIAS*.
7. Reduce power to idle when flying over the runway threshold and touch-down at the very beginning of the chosen area.
8. After stopping the airplane:
 - Ignition Switch - **OFF**
 - All switches - OFF
 - FUEL** selector - **OFF**
 - Airplane - lock and seek assistance

NOTE

Watch the chosen area steadily during precautionary landing.

3.11 Engine fire during start

1. **FUEL** selector - **OFF**
2. **THROTTLE** - **MAX**
3. Ignition Switch - **OFF**
4. **MASTER BAT & GEN** - OFF
5. Airplane - leave
6. Extinguish fire by yourself or call for a fire-brigade if you cannot do it.

3.12 Engine fire in flight

1. **FUEL** selector - **OFF**
2. **THROTTLE** - **MAX**
3. **CABIN HEATER** - **PUSH OFF**
4. Ignition Switch - **OFF** - after the fuel in carburetors is consumed and engine shut down
5. Airspeed - maintain *60 KIAS*
6. Emergency landing - perform according to 3.9 as soon as possible
7. Airplane - leave
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!

3.13 *Electrical fire in flight*

1. **MASTER BAT & GEN** - OFF
2. Other switches - OFF
3. **CABIN HEATER** - **PUSH OFF**
4. Ventilation - open
5. Emergency landing - perform according to 3.9 as soon as possible

3.14 *Emergency descent*

1. THROTTLE - **IDLE**
2. Airspeed - max. permitted
 - $V_{NE} = 138$ KIAS
 - $V_{NO} = 108$ KIAS
 - $V_A = 88$ KIAS
3. Engine RPM - do not overrun max. *5,800 rpm*

3.15 *Generator failure*

- “GEN” red LED annunciator illuminates and
- Voltmeter indicates voltage under *12.5 V*.

1. **MASTER BAT & GEN** - ON
2. Engine RPM - increase above *3,000 rpm*

If the generator failure indication persists:

3. **MASTER GEN** - OFF – ON

If the generator failure indication persists:

4. **MASTER GEN** - OFF
5. All unnecessary electrical equipment - OFF
6. Voltmeter - monitor voltage of battery
7. Land as soon as possible at nearest suitable airport.

3.16 Overvoltage

- Voltmeter permanently indicates voltage over 14.6 V.
- 1. Engine RPM - decrease to minimum usable for flight

If the overvoltage indication persists:

2. **MASTER GEN** - OFF
3. All unnecessary electrical equipment - OFF
4. Voltmeter - monitor voltage of battery
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 30 minutes.
The engine runs independently on generator functioning.*

3.17 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. Flaps (if extended) - retract (0°)
3. Ailerons control - neutral
4. Rudder control - full deflect opposite to the sense of rotation
5. Elevator control - push forward

After rotation stops:

6. Rudder control - neutral
7. Elevator control - pull gently to recover diving

WARNING

Intentional spins are prohibited!

3.18 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 AIR** - **PULL HOT**
3. **CABIN HEATER** - **PULL ON**
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 3.10 or emergency landing according to 3.9.

NOTE

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

NOTE

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

3.19 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.

1. **CARBURETOR AIR** - **PULL HOT**
2. Check engine running and monitor engine instruments.
3. Land as soon as possible at nearest suitable airport.

NOTE

When using the carburetor heating, engine power will decrease due to hot air suction from the heat exchanger.

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 3.10.

3.20 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 3.10.

3.21 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.

3.22 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.

3.23 Loss of primary instruments

Flight instruments malfunction or failure

1. GPS - Use for flight
2. Land as soon as practicable

CAUTION

GPS show ground speed only – take the surface wind into account!

Engine instruments malfunction or failure

1. ENG INSTR switch - ON
2. ENG INSTR circuit breaker - ON
3. Land as soon as practicable

CAUTION

Do not use maximum engine power without RPM indication!

3.24 Loss of flight controls

Lateral control failure

Use the Aileron Trim and Rudder for aircraft banking.

CAUTION

*Avoid steep turns – more than 15° of bank!
Do not extend wing flaps!*

Longitudinal control failure

Use the Elevator Trim and Throttle for aircraft longitudinal attitude change.

CAUTION

*Avoid abrupt manoeuvres! Longer runway will be need for landing!
Do not extend wing flaps!*

3.25 Throttle lever linkage cables failure

If power setting is not possible:

1. Ignition Switch - **OFF**
2. Airspeed - maintain 60 KIAS
3. Emergency landing - perform according to 3.9

3.26 Inadvertent canopy opening during takeoff

- During takeoff – aircraft rotation occurs, the canopy opens approximately 2 in.
- During climb and descent with airspeed at 60-75 KIAS, the canopy stays opened 2 - 3.2 in.
- During horizontal flight with airspeed at 60-80 KIAS, the canopy stays opened 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 KIAS
4. Continue to fly the normal traffic pattern (circuit)
 - max. airspeed 75 KIAS
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.

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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.*

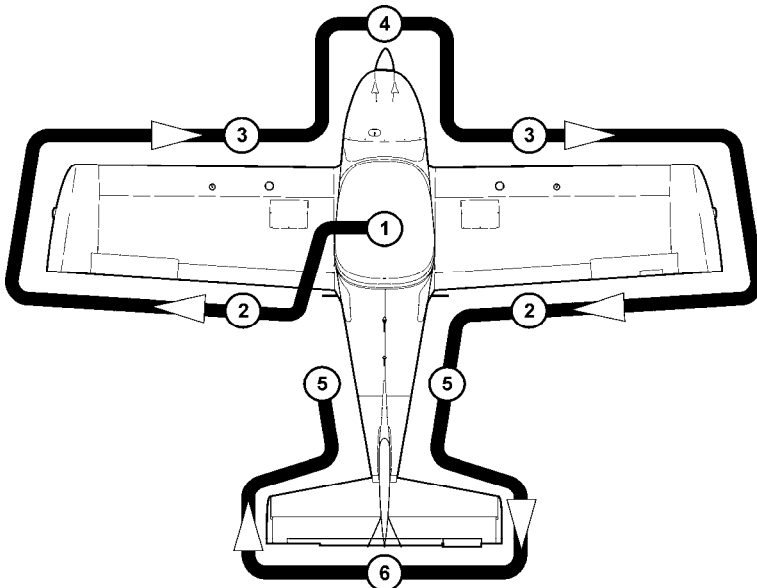
4.1 Preflight check

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"> • Canopy - condition of attachment, cleanness • Check cockpit for loose objects <li style="padding-left: 20px;"><i>Switches:</i> • Ignition - OFF • MASTER BAT - ON • ENG INSTR - ON, check Engine instruments functioning - check Fuel quantity indication - check Battery voltage • FLT INSTR - ON, check Electric attitude indicator, Electric directional gyro and Electric turn coordinator functioning • AVIONICS - ON - check functioning of Transponder, Transceiver and Intercom • NAV L, STROBE, LDG L - ON, check functioning • COCKPIT L, INSTR L - ON, check functioning • Control system - visual inspection, function, clearance, free movement up to stops, check wing flaps and trims operation • All switches - OFF • MASTER BAT - OFF
②	<ul style="list-style-type: none"> • Wing flap - surface condition, attachment, clearance • Aileron - surface condition, attachment, clearance, free movement, trim tab surface condition (<i>Right aileron only</i>), attachment • Wing tip - surface condition, strobe/nav light attachment
③	<ul style="list-style-type: none"> • Wing upper surface - condition, cleanness • Leading edge - surface condition, cleanness

③	<ul style="list-style-type: none"> • Wing locker - closed and locked • Pitot head - condition, attachment, cleanness (<i>Left wing only</i>)
④	<ul style="list-style-type: none"> • Nose gear - wheel, fairing and leg attachment, condition, pressure of tire • Engine cowling - condition • Propeller and spinner - condition • Engine mount and exhaust manifold - condition, attachment • Oil quantity - check (before this check, ensure Ignition switch and MASTER BAT - 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 • Fuel and electrical system - visual inspection • Fuel system - draining • Other actions according to the engine manual
⑤	<ul style="list-style-type: none"> • Main landing gear - wheel, fairing, leg and brake attachment, condition, pressure of tire • Fuselage surface - condition, cleanness • Antennas - attachment
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 stop - trim tab surface condition, attachment - anti-balance tab surface condition, attachment

CAUTION
Perform Weight and Balance check before flight.

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 switch - 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, close and lock
3. Safety harness - fasten
4. Brakes - fully applied
5. **PARKING BRAKE** - use

4.2.2 Engine starting

1. THROTTLE - **IDLE**
2. **CHOKE** - cold engine - **ON** (fully pulled and hold)
- warm engine - **OFF**
3. **FUEL** selector - **LEFT** or **RIGHT** (*in accordance with fuel tanks filling*); check correct position - green mark (see Chapter 7.11)
4. **MASTER BAT** - ON
5. **ENG INSTR** - ON
6. **FUEL P** - ON
7. Propeller area - clear
8. Ignition Switch - hold **START**
after engine is starting - **BOTH**

After engine is running:

9. **MASTER GEN** - ON
10. **FLT INSTR** - ON
11. **AVIONICS** - ON
12. **FUEL P** - OFF

- | | |
|---------------------|--|
| 13. Other switches | - ON as necessary |
| 14. CHOKE | - gradually release during engine warming up |
| 15. 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 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.*

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 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** 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

1. Flaps - retracted (0°)
2. **PARKING BRAKE** - release
3. Brakes - function check at taxiing start

Apply power and brakes as needed. Apply brakes to control movement on ground. Taxi carefully when wind velocity exceeds 20 knots. Hold the control stick in neutral position.

4.4 Normal Takeoff

4.4.1 Before takeoff

1. Altimeter - set
2. Trims - 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 - **LEFT** or **RIGHT**; check correct position - green mark (see Chapter 7.11)
7. Ignition switch - **BOTH**
8. Flaps - takeoff position (12°)

4.4.2 Takeoff

1. THROTTLE - **MAX**
2. Engine speed - check (5,000 ± 100 rpm)
3. Engine gauges - within limits
4. Elevator control - neutral position
- at 30 - 34 KIAS pull slightly to lift the nose wheel
5. Airplane unstick - at 40 - 44 KIAS
6. Climb - after reaching airspeed 65 KIAS
7. Brakes - apply
8. Flaps - retract (0°) at safe altitude
(max. airspeed for flaps using is 75 KIAS)
9. Trims - as necessary

WARNING

Takeoff is prohibited if:

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

4.5 Climb

1. THROTTLE - **MAX**
(max. 5,800 rpm for max. 5 min,
max. continuous power 5,500 rpm)
2. Airspeed - $V_x = 56$ KIAS
- $V_y = 62$ KIAS
3. Trims - as necessary
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 KIAS

4.7 Best rate of climb speed (V_y): 62 KIAS

4.8 Cruise

Refer to Section 5, for recommended cruising figures.

4.9 Descend

1. Optimum glide speed - 60 KIAS

4.10 Approach

1. Approach speed - 60 KIAS
2. THROTTLE - as necessary
3. Flaps - takeoff position (12°)
4. Trims - 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), airspeed 60-75 KIAS 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 KIAS
3. Flaps - landing position (30°)
4. Trims - 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. Flaps - retract (0°)
2. THROTTLE - engine RPM set as required for taxiing
3. Trims - set neutral position

4.11.4 Engine shut down

1. THROTTLE - **IDLE**
2. Instruments - engine instruments within limits
3. Ignition Switch - **OFF**
4. Switches - OFF
5. **MASTER BAT & GEN** - OFF
6. **FUEL** selector - **OFF**

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 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 - **MAX**
(max. 5,800 rpm for max. 5 min,
max. continuous power 5,500 rpm)
2. Airspeed - min. 60 KIAS
3. Flaps - takeoff position (12°)
(max. airspeed for flaps using is 75 KIAS)
4. Trims - as necessary
5. Climb - after reaching 65 KIAS
6. Flaps - retract (0°) at safe altitude
(max. airspeed for flaps using is 75 KIAS)
7. Trims - as necessary

4.14 *Aircraft parking and tie-down*

1. Ignition Switch - **OFF**
2. **MASTER BAT & GEN** - OFF
3. **FUEL** selector - **OFF**
4. Parking brake - as necessary
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.

4.15 Night flights

In addition to normal "Day flights" procedures it is necessary to perform undermentioned "Night flights" procedures.

4.15.1 Preflight check

Perform careful preflight check of whole Lighting system and Battery condition before night flights.

4.15.2 Before engine starting

1. COCKPIT L - ON
2. INSTR L - ON, adjust illumination level
3. NAV L - ON
4. LDG L - ON - check function - OFF

4.15.3 After engine starting

1. COCKPIT L - OFF
2. GPS, Transponder, Transceiver
- check illumination level, adjust if need be

4.15.4 Before taxiing

1. STROBE - ON - as necessary
2. LDG L - ON

4.15.5 Before takeoff

1. LDG L - OFF

4.15.6 Approach – Before landing

1. LDG L - ON

4.15.7 After landing

1. STROBE - OFF - as necessary

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 *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 *98.6 hp* and **WOODCOMP KLASSIC 170/3/R** three composite blades ground adjustable propeller with pitch setting *17.5°*.

CAUTION

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

5.1 Takeoff distances

- Conditions:** - Altitude: *0 ft* ISA
 - Engine power: *max. takeoff*
 - Flaps: *12°*

RUNWAY SURFACE	Takeoff run distance	Takeoff distance over 50 ft obstacle
	<i>ft</i>	<i>ft</i>
CONCRETE	463	1,270
GRASS	702	1,499

5.2 Landing distances

- Conditions:** - Altitude: *0 ft* ISA
 - Engine power: *idle*
 - Flaps: *30°*
 - Normal brakes operation

RUNWAY SURFACE	Landing distance over 50 ft obstacle	Landing run distance (braked)
	<i>ft</i>	<i>ft</i>
CONCRETE	1,188	479
GRASS	1,109	364

5.3 Rate of climb

Conditions: Engine: <i>max. takeoff</i> Flaps: <i>0°</i>	Best rate of climb speed Vy	Rate of climb Vz
Altitude	<i>KIAS</i>	<i>fpm</i>
0 ft	62	825
1,000 ft	62	783
3,000 ft	62	685
5,000 ft	62	576
7,000 ft	62	472
9,000 ft	62	355

5.4 Cruise speeds

Altitude	Engine speed	Airspeeds			MAP	Fuel consumption
ft	rpm	KIAS	KCAS	KTAS	in Hg	US gal/h
1,000	4,200	72	72	73	23.7	3.59
	4,500	81	80	81	24.6	4.15
	4,800	91	89	89	25.5	4.76
	5,000	96	94	95	26.1	5.15
	5,300	105	102	103	27.0	5.79
	5,500	112	108	109	27.7	6.26
	5,700	118	113	114	28.3	6.82
3,000	4,200	68	69	72	22.2	3.49
	4,500	78	77	80	23.0	4.04
	4,800	86	85	88	23.8	4.62
	5,000	93	91	94	24.3	5.02
	5,300	102	99	102	25.1	5.65
	5,500	108	104	108	25.5	6.16
5,000	4,200	65	66	71	20.5	3.41
	4,500	74	74	79	21.3	3.94
	4,800	83	82	87	22.1	4.54
	5,000	89	87	93	22.7	4.94
	5,300	97	95	101	23.5	5.57
	5,500	103	100	107	24.1	6.02
7,000	4,200	62	63	69	19.3	3.30
	4,500	69	70	77	20.0	3.86
	4,800	79	78	85	20.6	4.44
	5,000	84	83	91	21.2	4.86
	5,300	92	90	99	22.0	5.49
	5,500	98	95	105	22.5	5.89
9,000	4,200	57	59	67	18.4	3.22
	4,500	64	65	74	19.0	3.78
	4,800	73	73	83	19.6	4.33
	5,000	79	78	89	20.0	4.76
	5,300	86	85	97	20.5	5.39
	5,500	92	90	103	20.8	5.76

5.5 RPM setting and fuel consumption

Altitude	ft	<i>1,000</i>					
Engine speed	<i>rpm</i>	4,200	4,500	4,800	5,000	5,300	5,500
Fuel consumption	<i>US gal/h</i>	3.59	4.15	4.76	5.15	5.79	6.26
Airspeeds	<i>KIAS</i>	72	81	91	96	105	112
	<i>KCAS</i>	72	80	89	94	102	108
	<i>KTAS</i>	73	81	89	95	103	109
<i>Endurance and Range at 29.85 US gal</i>							
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>Endurance and Range at 23.78 US gal</i>							
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>Endurance and Range at 15.85 US gal</i>							
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>Endurance and Range at 7.93 US gal</i>							
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>Endurance and Range at 3.96 US gal</i>							
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

Altitude	ft	3,000					
Engine speed	rpm	4,200	4,500	4,800	5,000	5,300	5,500
Fuel consumption	US gal/h	3.49	4.04	4.62	5.02	5.65	6.16
Airspeed	KIAS	68	78	86	93	102	108
	KCAS	69	77	85	91	99	104
	KTAS	72	80	89	95	103	109
<i>Endurance and Range at 29.85 US gal</i>							
Endurance	hh:mm	8:33	7:23	6:27	5:56	5:16	4:50
Range	NM	616	591	568	559	539	524
<i>Endurance and Range at 23.78 US gal</i>							
Endurance	hh:mm	6:49	5:52	5:08	4:44	4:12	3:51
Range	NM	491	471	453	445	429	417
<i>Endurance and Range at 15.85 US gal</i>							
Endurance	hh:mm	4:32	3:55	3:25	3:09	2:48	2:34
Range	NM	327	314	302	297	286	278
<i>Endurance and Range at 7.93 US gal</i>							
Endurance	hh:mm	2:16	1:57	1:42	1:34	1:24	1:17
Range	NM	164	157	151	148	143	139
<i>Endurance and Range at 3.96 US gal</i>							
Endurance	hh:mm	1:08	0:58	0:51	0:47	0:42	0:38
Range	NM	82	78	75	74	71	70

Altitude	ft	<i>5,000</i>					
Engine speed	<i>rpm</i>	4,200	4,500	4,800	5,000	5,300	5,500
Fuel consumption	<i>US gal/h</i>	3.41	3.94	4.54	4.94	5.57	6.02
Airspeed	<i>KIAS</i>	65	74	83	89	97	103
	<i>KCAS</i>	66	74	82	87	95	100
	<i>KTAS</i>	71	79	87	93	101	107
<i>Endurance and Range at 29.85 US gal</i>							
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>Endurance and Range at 23.78 US gal</i>							
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>Endurance and Range at 15.85 US gal</i>							
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>Endurance and Range at 7.93 US gal</i>							
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>Endurance and Range at 3.96 US gal</i>							
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

Altitude	ft	<i>7,000</i>					
Engine speed	<i>rpm</i>	4,200	4,500	4,800	5,000	5,300	5,500
Fuel consumption	<i>US gal/h</i>	3.30	3.86	4.44	4.86	5.49	5.89
Airspeed	<i>KIAS</i>	62	69	79	84	92	98
	<i>KCAS</i>	63	70	78	83	90	95
	<i>KTAS</i>	69	77	85	91	99	105
<i>Endurance and Range at 29.85 US gal</i>							
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>Endurance and Range at 23.78 US gal</i>							
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>Endurance and Range at 15.85 US gal</i>							
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>Endurance and Range at 7.93 US gal</i>							
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>Endurance and Range at 3.96 US gal</i>							
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

Altitude	ft	<i>9,000</i>					
Engine speed	<i>rpm</i>	4,200	4,500	4,800	5,000	5,300	5,500
Fuel consumption	<i>US gal/h</i>	3.22	3.78	4.33	4.76	5.39	5.76
Airspeed	<i>KIAS</i>	57	64	73	79	86	92
	<i>KCAS</i>	59	65	73	78	85	90
	<i>KTAS</i>	67	74	83	89	97	103
<i>Endurance and Range at 29.85 US gal</i>							
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>Endurance and Range at 23.78 US gal</i>							
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>Endurance and Range at 15.85 US gal</i>							
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>Endurance and Range at 7.93 US gal</i>							
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>Endurance and Range at 3.96 US gal</i>							
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

5.6 Airspeed indicator system calibration

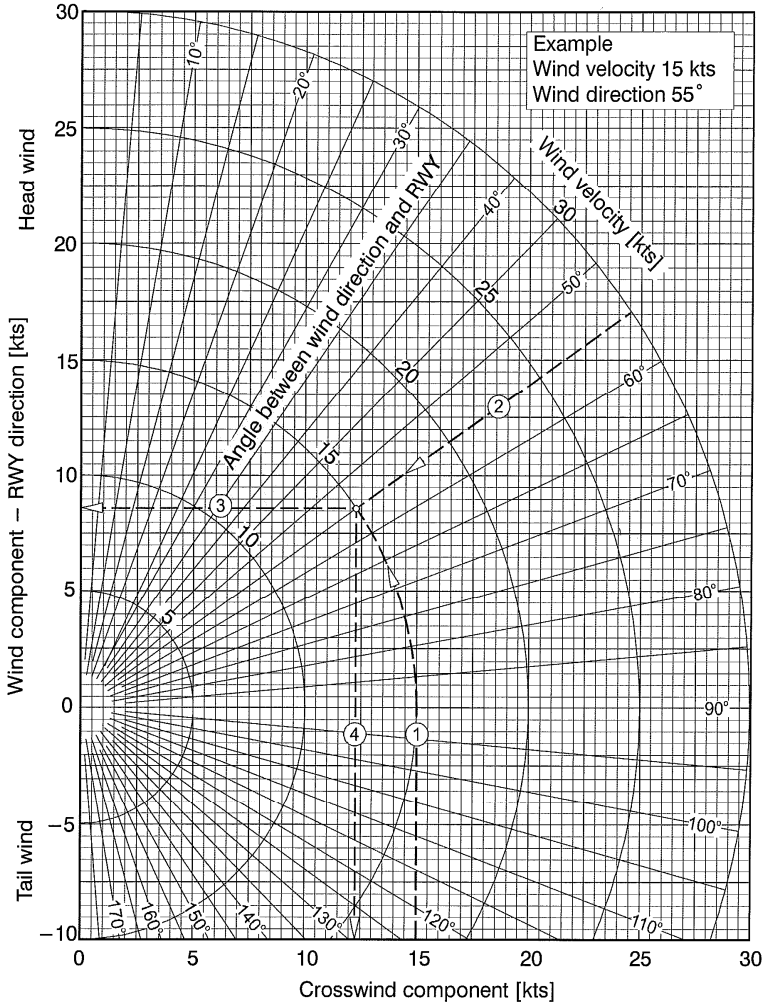
KIAS	KCAS
30	36
35	40
40	45
45	49
50	53
55	57
60	62
65	66
70	71
75	75
80	79
85	83
90	88
95	92
100	97
105	101
110	106
115	111
120	115
125	120
130	125
135	130
140	134

5.7 Demonstrated wind performance

Max. demonstrated headwind velocity for take-off and landing: 24 knots

Max. demonstrated crosswind velocity for take-off and landing: 12 knots

Wind components figure



Example: 1. Wind velocity 15 knots 3. Headwind component 8.6 knots
 2. Wind direction 55° 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 *SportCruiser* 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

- The DATUM (reference plane) for arms measuring is on the wing leading edge Rib No.4.
- Obtain measurement LR and LL by measuring horizontally (along the airplane center line) from a line stretched between datum on the left and right wing.

- Obtain measurement LN by measuring horizontally and parallel to the airplane center line, from center of nose wheel axle left sides, to the datum on the left wing. 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 Operating weights and loading

Weights:

Max. takeoff weight.....	1,320 lb
Max landing weight.....	1,320 lb
Max. weight of fuel.....	180 lb
Max. baggage weight in rear fuselage.....	40 lb
Max. baggage weight in each wing locker.....	22 lb
Empty weight (minimum equipment).....	760 lb

Crew:

Number of seats.....	2
Minimum crew (<i>only on the left seat</i>).....	1 pilot
Minimum crew weight.....	121 lb
Maximum crew weight on each seat.....	253 lb

Arms:

Pilot/Passenger.....	27.56 in
Baggage compartment.....	51.58 in
Wing lockers.....	23.62 in
Fuel tanks.....	7.09 in

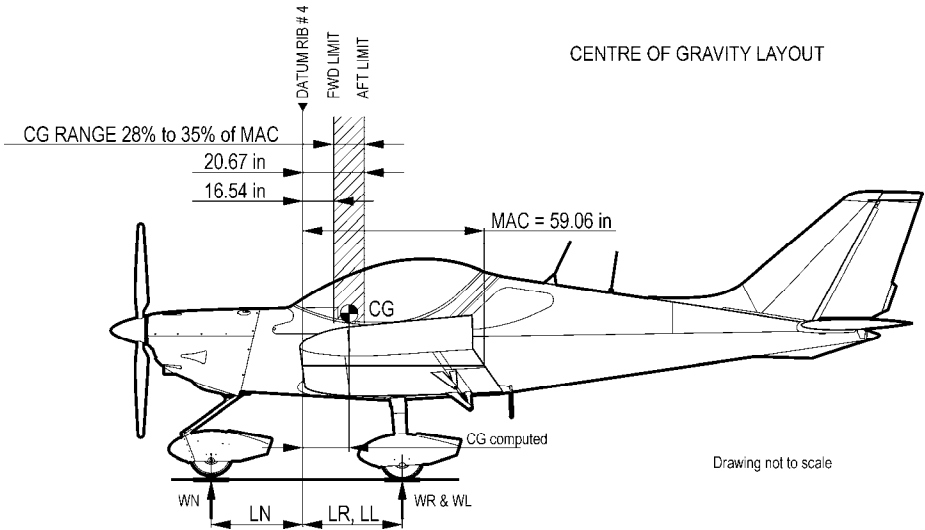
NOTE

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

NOTE

For the needs of this Handbook the fuel specific weight of 6 lb/US gal was used to convert volume units into weight units.

6.4 Weight and balance C.G. layout



6.5 C.G. range and determination

6.5.1 Aircraft C.G. range:

Empty weight C.G. range.....	28.5 to 29.5 % of MAC
	16.83 to 17.42 in of MAC
Operating C.G. range	28 to 35 % of MAC
	16.54 to 20.67 in of MAC

6.5.2 Aircraft C.G. determination

After any changes in equipment or if the aircraft weight is affected by any alternation or repair, a new weighing and C.G. determination perform as follows:

Aircraft empty weight C.G. determination

1. Aircraft weighing according to 6.2.
2. Record weight and arm values to the aircraft empty weight C.G. table, nose wheel arm is negative (-).
3. Calculate and record moment for each of the main and nose wheels using the following formula:

$$MOMENT (lb\ in) = WEIGHT (lb) \times ARM (in)$$

Nose wheel moment is negative (-).

4. Calculate and record total weight and moment.
5. Determine and record empty weight C.G. using the following formula:

$$AIRCRAFT\ EMPTY\ WEIGHT\ C.G. = \frac{M_{TE}}{W_{TE}} (in) \times \frac{100}{MAC} (\%) \text{ of MAC}$$

Aircraft empty weight C.G. determination table

AIRCRAFT EMPTY C.G.	ITEM	WEIGHT lb	ARM in	MOMENT lb in
	RIGHT MAIN WHEEL	$W_R =$	$L_R =$	
	LEFT MAIN WHEEL	$W_L =$	$L_L =$	
	NOSE WHEEL	$W_N =$	$L_N = -$ negative arm	-
	TOTAL	Empty weight: $W_{TE} =$	C.G. = in % MAC	Aircraft moment: $M_{TE} =$

NOTE: Empty weight is including oil, coolant, hydraulic fluid and unusable fuel.

NOTE

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

Blank form of Weight & Balance record

WEIGHT & BALANCE RECORD

Empty weight C.G. determination table

AIRCRAFT EMPTY C.G.	ITEM	WEIGHT lb	ARM in	MOMENT lb in
	RIGHT MAIN WHEEL	$W_R =$	$L_R =$	
	LEFT MAIN WHEEL	$W_L =$	$L_L =$	
	NOSE WHEEL	$W_N =$	$L_N =$ - negative arm	-
	TOTAL	Empty weight: $W_{TE} =$	C.G. = in % MAC	Aircraft moment: $M_{TE} =$

NOTE:

Empty weight is including oil, coolant, hydraulic fluid and unusable fuel.

Empty weight C.G. range : 16.83 to 17.42 in / 28.5 to 29.5 % of MAC

Operating C.G. range : 16.54 to 20.67 in / 28 to 35 % of MAC

MAC : 59.06 in

MOMENT (lb in) = WEIGHT (lb) x ARM (in)

$$\text{AIRCRAFT EMPTY WEIGHT C.G.} = \frac{M_{TE}}{W_{TE}} \text{ (in)} \times \frac{100}{\text{MAC}} \text{ (\% of MAC)}$$

Registration:
Serial No.:
Date:
By:

6.6 Loading and C.G. check

Before flight is important to determine that the aircraft is loaded so its weight and C.G. location are within the allowable limits.

Aircraft loading and C.G. determination perform as follows:

1. Record actual empty weight, arm and moment to the table.
2. Record weights of pilot, passenger, baggage and fuel to the table.
3. Calculate and record moment for each item using the following formula:

$$MOMENT (lb\ in) = WEIGHT (lb) \times ARM (in)$$

4. Calculate and record total weight and moment.
5. Determine and record aircraft C.G. using the following formula:

$$AIRCRAFT\ C.G. = \frac{M_T}{W_T} (in) \times \frac{100}{MAC} (\% \text{ of } MAC)$$

6. If loading or C.G. calculation results exceed maximum permitted values, reduce baggage or fuel weight and repeat calculation.
7. It is important to perform loading and C.G. check without fuel (in case of total fuel depletion) – most rearward C.G. check.

Loading and C.G. check table

ITEM	WEIGHT lb	ARM in	MOMENT lb in
EMPTY AIRCRAFT			
PILOT		27.56	
PASSENGER		27.56	
BAGGAGE COMPARTMENT		51.58	
WING LOCKERS		23.62	
FUEL TANKS		7.09	
TOTAL	W_T=	C.G. = in % MAC	M_T=

Example of Loading and C.G. check

Aircraft empty data:

weight..... 851.4 lb
 arm..... 17.02 in
 moment..... 14,493.06 lb in
 MAC 59.06 in

Operating weights:

pilot 187.0 lb
 passenger 143.0 lb
 baggage in cockpit 22.0 lb
 baggage in wing lockers..... 22.0 lb
 fuel in tanks..... 94.6 lb (15.8 US gal)

Loading and C.G. check table

<i>ITEM</i>	<i>WEIGHT</i> <i>lb</i>	<i>ARM</i> <i>in</i>	<i>MOMENT</i> <i>lb in</i>
<i>EMPTY AIRCRAFT</i>	851.4	17.02	14,493.06
<i>PILOT</i>	187.0	27.56	5,153.72
<i>PASSENGER</i>	143.0	27.56	3,941.08
<i>BAGGAGE COMPARTMENT</i>	22.0	51.58	1,134.76
<i>WING LOCKERS</i>	22.0	23.62	519.64
<i>FUEL TANKS</i>	94.6	7.09	670.71
<i>TOTAL</i>	<i>W_T = 1,320.0</i>	<i>C.G. = 19.63 in</i> <i>33.2 % MAC</i>	<i>M_T = 25,912.98</i>

Loading and C.G. check table – zero fuel

ITEM	WEIGHT lb	ARM in	MOMENT lb in
EMPTY AIRCRAFT	851.4	17.02	14,493.06
PILOT	187.0	27.56	5,153.72
PASSENGER	143.0	27.56	3,941.08
BAGGAGE COMPARTMENT	22.0	51.58	1,134.76
WING LOCKERS	22.0	23.62	519.64
FUEL TANKS	0.0	7.09	0.0
TOTAL	$W_T = 1,225.4$	$C.G. = 19.63$ in $33.2\% \text{ MAC}$	$M_T = 25,242.26$

Blank form of Loading and C.G. check

WEIGHT & BALANCE RECORD

Aircraft C.G. check table

ITEM	WEIGHT lb	ARM in	MOMENT lb in
EMPTY AIRCRAFT			
PILOT		27.56	
PASSENGER		27.56	
BAGGAGE COMPARTMENT		51.58	
WING LOCKERS		23.62	
FUEL TANKS		7.09	
TOTAL	$W_T =$	C.G. = in % MAC	$M_T =$

NOTE:

Empty weight is including oil, coolant, hydraulic fluid and unusable fuel.

Maximum fuel quantity in wing tanks (30.1 US gal = 180.6 lb) is used for most forward C.G. calculation.

Zero fuel quantity in wing tanks is used for most rearward C.G. calculation (in case of total fuel depletion).

Max. takeoff weight : 1,320 lb

Max. weight in baggage compartment : 40 lb

Max. weight in each wing locker : 22 lb

Empty weight C.G. range : 16.83 to 17.42 in / 28.5 to 29.5 % of MAC

Operating C.G. range : 16.54 to 20.67 in / 28 to 35 % of MAC

MAC : 59.06 in

MOMENT (lb in) = WEIGHT (lb) x ARM (in)

$$\text{AIRCRAFT C.G.} = \frac{M_T}{W_T} \text{ (in)} \times \frac{100}{\text{MAC}} \text{ (\% of MAC)}$$

Registration:

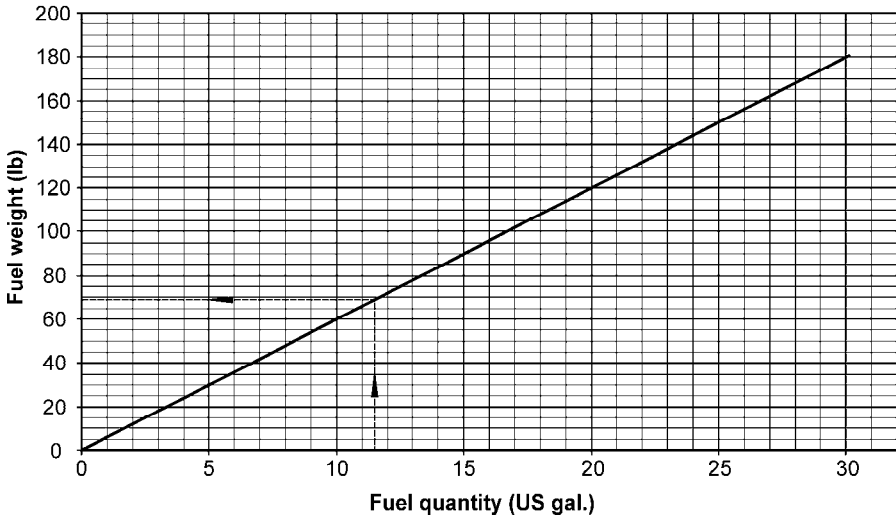
Serial No.:

Date:

By:

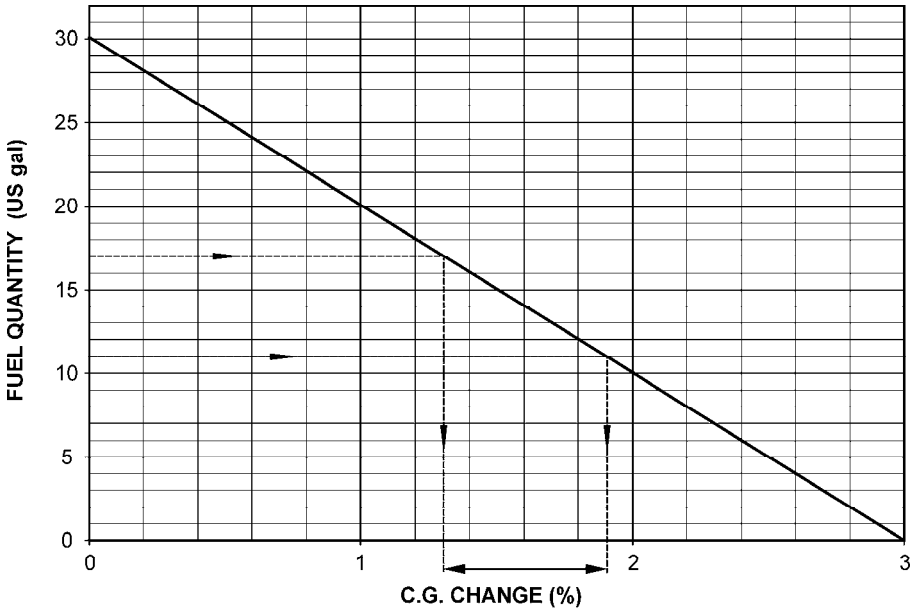
6.7 Fuel weight – quantity conversion chart

FUEL WEIGHT - QUANTITY CONVERSION CHART



6.8 C.G. change in dependence of fuel quantity

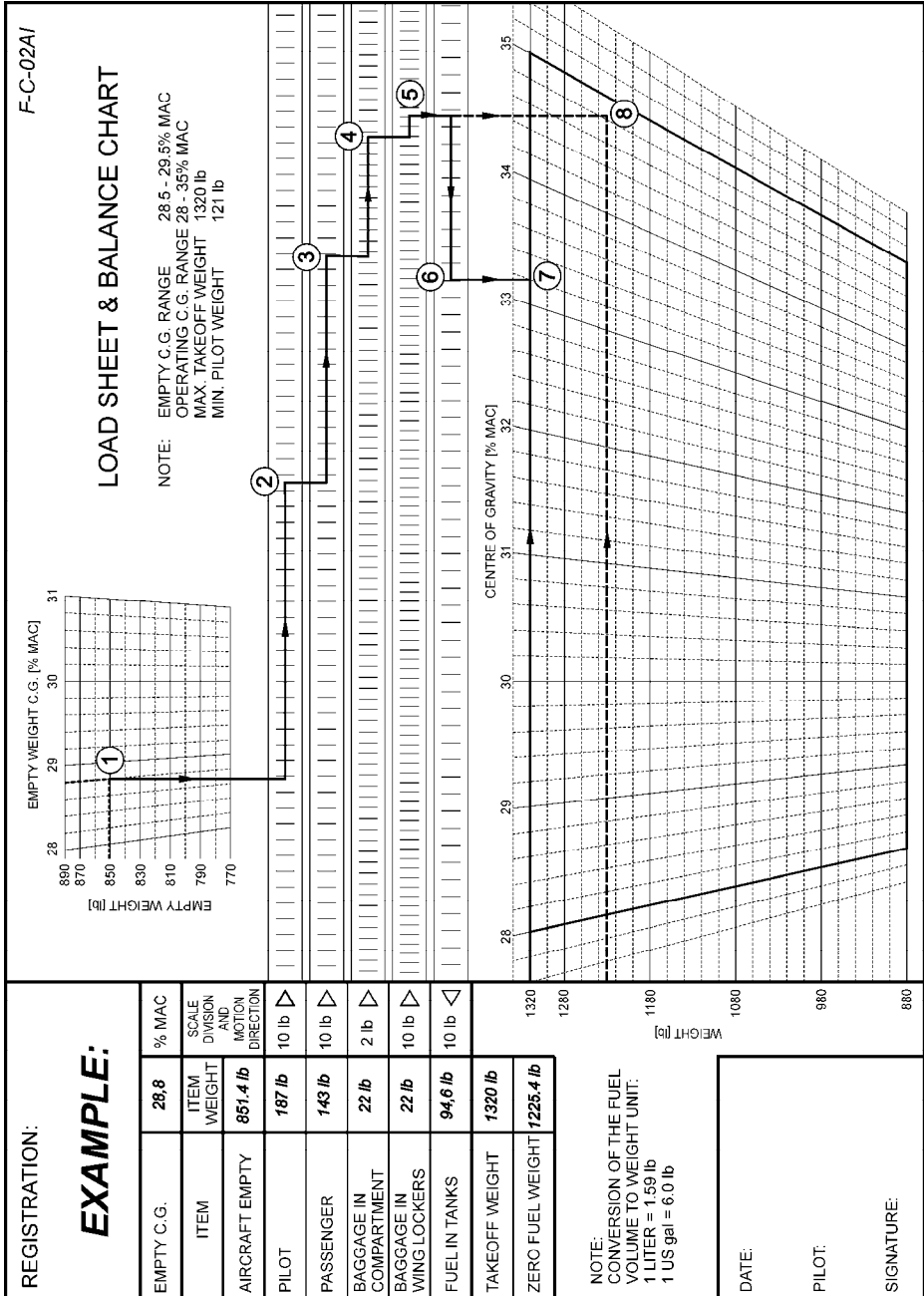
C.G. CHANGE IN DEPENDENCE OF FUEL QUANTITY



6.9 Load sheet and Balance chart

This chart makes possible to perform loading and C.G. check before flight simply and quickly. The undermentioned example shows how to use this chart. Perform following steps:

1. Record Empty weight and Empty C.G. (*% of MAC*) to the table.
2. Record the other used weight items to the table.
3. Calculate Total weight and record to the table.
4. Calculate Zero fuel weight record to the table – it is total weight without fuel weight (for most rearward C.G. check - in case of total fuel depletion).
5. The starting position line drawing is the intersection point of empty weight with empty C.G. marked as ①.
6. Go vertically down to the pilot weight scale, than continue horizontally to the right direction and pilot weight add. This is the point ②.
7. Repeat step 6 for the other used weight items (point ③ ④ ⑤) except fuel weight that is subtracted to the left direction to the point ⑥.
8. Go vertically down to the larger Aircraft C.G. chart to the crossing with Total weight line. This is the point ⑦ - actual Aircraft C.G. location in % of MAC - for takeoff.
8. In the end go vertically down from point ⑤ to the larger Aircraft C.G. chart to the crossing with Zero fuel weight line. This is the point ⑧ most rearward aircraft C.G. in % of MAC - without fuel.



Blank form of Load sheet & Balance chart

REGISTRATION:		
EMPTY C.G.		% MAC
ITEM	ITEM WEIGHT	SCALE DIVISION AND MOTION DIRECTION
AIRCRAFT EMPTY		
PILLOT		10 lb ▽
PASSENGER		10 lb ▽
BAGGAGE IN COMPARTMENT		2 lb ▽
BAGGAGE IN WING LOCKERS		10 lb ▽
FUEL IN TANKS		10 lb ▽
TAKEOFF WEIGHT		
ZERO FUEL WEIGHT		

NOTE:
CONVERSION OF THE FUEL VOLUME TO WEIGHT UNIT:
1 LITER = 1.59 lb
1 US gal = 6.0 lb

WEIGHT (lb)

1180

1080

980

880

CENTRE OF GRAVITY [% MAC]

28 29 30 31 32 33 34 35

EMPTY WEIGHT C.G. [% MAC]

28 29 30 31

NOTE:
EMPTY C.G. RANGE 28.5 - 29.5% MAC
OPERATING C.G. RANGE 28 - 35% MAC
MAX. TAKEOFF WEIGHT 1320 lb
MIN. PILOT WEIGHT 121 lb

LOAD SHEET & BALANCE CHART

F-C-02A/

6.10 Installed equipment list

NOTE

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

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SECTION 7

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7. DESCRIPTION OF AIRPLANE AND SYSTEMS

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7.6	Propeller	7-4
7.7	Landing gear	7-5
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7.13	Flight instruments and Avionics	7-7
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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.

SportCruiser 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*

NOTE

Actual Instrument panel layout and Description of instrumentation and controls in the cockpit are shown in Section 9, Supplement No. 2.

7.5 *Engine*

ROTAX 912 ULS engine with maximum power 98.6 *hp* is installed in this aircraft. 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 and 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 “Operator’s 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

The heated air is 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

The following analog engine instruments are located on the right side of instrument panel:

- engine speed
- oil pressure and temperature
- cylinder head temperature
- fuel pressure

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. The propeller diameter is 68 in.

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 40 lbs.

Baggage may also be loaded into the baggage compartment inside each wing up to 22 lbs, 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 compartments in the 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

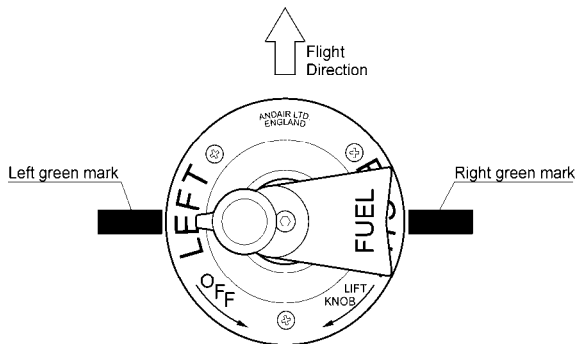
Access to the cabin is from both sides. Make sure that the canopy is latched and mechanism is securely locked into position on both sides before operating the aircraft and manually check the canopy is locked by pushing the canopy upward. The canopy unlocked indicates **CABIN OPENED** red LED flashing placed on upper left part of instrument panel.

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 firewall, on the gascolator. Fuel selector valve is on the central console in the cockpit. The electric fuel pump is located on firewall 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

*Fuel is not closed when the fuel valve is in upper half between **LEFT** and **RIGHT** tank positions.*

*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 overfill the left tank.*

CAUTION

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

7.12 Electrical system

Generator

The AC generator (250 W AC) is integrated in the engine and it is connected to the electric bus through the external rectifier regulator (12 V 20 A DC).

Battery

The 12 V battery is mounted on the front side of firewall.

Master battery switch

MASTER BAT switch connects the 12 V battery to the electrical system.

Master generator switch

MASTER GEN switch connects the alternator to the electrical system.

Circuit breakers and switches

NOTE

Circuit breakers and switches description is shown in Section 9, Supplement No. 02.

7.13 Instruments and Avionics

NOTE

Instruments and avionics description is shown in Section 9, Supplement No. 02.

NOTE

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

7.14 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.

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SECTION 8

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8. HANDLING AND SERVICING

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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.
Always use tow bar for direction control when pushing the airplane.*

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 - **OFF**
2. **MASTER BAT & GEN** - OFF
3. Other switches - OFF
4. Ignition Switch - **OFF**
5. Control stick - fix using e.g. safety harness
6. Air vent - close
7. Canopy - close and lock
8. 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 *SportCruiser* 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 quantity:

- Wing fuel tanks quantity..... 2x 15.06 US gal
- Unusable fuel quantity 2x 0.13 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:

- Minimum 0.87 US gal
- Maximum 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..... 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 *SportCruiser* aircraft Maintenance manual and the 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 periods listed in:

- *SportCruiser aircraft Maintenance manual* for aircraft maintenance.
- *Rotax engine Maintenance manual* for engine maintenance.
- *Woodcomp Klassic propeller manual* for propeller maintenance.

NOTE

Aircraft maintenance should be made in accordance with AC 43.13-1B.

8.9 Aircraft alternations 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.

NOTE

Aircraft repairs should be made in accordance with AC 43.13-1B.

SECTION 9

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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.
2011-09-01	01	Aircraft Flight Training Supplement	-
2011-09-08	02	Aircraft specification S/N:	-

9.2 *Inserted Supplements*

Supplement No. 01

Aircraft Flight Training Supplement

Introduction

The *SportCruiser* 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 *SportCruiser*.

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*

Low 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 give advice 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 :

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

6.5 C.G. range and determination

6.5.2 Aircraft C.G. determination

WEIGHT & BALANCE RECORD

Empty weight C.G. determination table

AIRCRAFT EMPTY C.G.	ITEM	WEIGHT lb	ARM in	MOMENT lb in
	RIGHT MAIN WHEEL	$W_R =$	$L_R =$	
	LEFT MAIN WHEEL	$W_L =$	$L_L =$	
	NOSE WHEEL	$W_N =$	$L_N =$ - negative arm	-
	TOTAL	Empty weight: $W_{TE} =$	C.G. = in % MAC	Aircraft moment: $M_{TE} =$

NOTE:

Empty weight is including oil, coolant, hydraulic fluid and unusable fuel.

Empty weight C.G. range : 16.83 to 17.42 in / 28.5 to 29.5 % of MAC

Operating C.G. range : 16.54 to 20.67 in / 28 to 35 % of MAC

MAC : 59.06 in

MOMENT (lb in) = WEIGHT (lb) x ARM (in)

$$\text{AIRCRAFT EMPTY WEIGHT C.G.} = \frac{M_{TE}}{W_{TE}} \text{ (in)} \times \frac{100}{\text{MAC}} \text{ (\% of MAC)}$$

Registration:
Serial No.:
Date:
By:

6.9 Installed equipment list

of SportCruiser aircraft S/N : P1102027

- *Rotax 912 ULS with airbox and thermostats*
- *Woodcomp KLASSIC 170/3/R*
- *Airspeed indicator, Altimeter*
- *Vertical speed indicator*
- *CM-24 Magnetic compass*
- *Electric attitude indicator*
- *Electric turn coordinator*
- *Electric turn coordinator*
- *Garmin GI-102A CDI*
- *Garmin SL30 transceiver*
- *PS Engineering PM3000 intercom*
- *Garmin GTX328 transponder*
- *Sandia SAE5-35 altitude encoder*
- *King AK451 ELT, Antennas*
- *Garmin Aera560 GPS*
- *Engine RPM indicator*
- *Oil pressure and temperature gauges*
- *CHT indicator, Voltmeter*
- *Fuel pressure and quantity gauges*
- *Engine hours counter*
- *G -205 trim control and PTT on the control sticks*
- *Trims and flaps electrically actuated*
- *AVE-WPST wing tips LED strobe/nav. lights*
- *Landing light in cowl*
- *Cockpit light, Instrument lighting*
- *Adjustable pedals*
- *Dual hydraulic brakes*
- *Parking brake*
- *Wheel fairings tricycle*
- *Cabin heating, Carburetor preheating*
- *Leather upholstery*
- *Paint*
- *Sunshade*
- *Arm supports*
- *Front ballast 5.51 lbs*

7. DESCRIPTION OF AIRPLANE AND SYSTEMS

7.4 Instrument panel

Instrument panel layout of *SportCruiser* aircraft S/N:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26



27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 28 27

Description of instrumentation and controls in the cockpit

1	<i>Vertical speed indicator</i>	23	<i>CHT indicator</i>
2	<i>Electric turn coordinator</i>	24	<i>Voltmeter</i>
3	<i>Airspeed indicator</i>	25	<i>Engine hours counter</i>
4	<i>Electric directional gyro</i>	26	<i>Socket 12V</i>
5	<i>Electric attitude indicator</i>	27	<i>Vent-air outlet</i>
6	<i>Cabin unlocked warning light</i>	28	<i>PTT / elevator trim / aileron trim buttons</i>
7	<i>Fuel pump operation lamp</i>	29	<i>Switches *</i>
8	<i>Generator failure warning light</i>	30	<i>Ignition switch</i>
9	<i>CDI</i>	31	<i>Transceiver</i>
10	<i>Cockpit light switch</i>	32	<i>PS Engineering Intercom</i>
11	<i>Instruments lighting dimmer</i>	33	<i>Elevator trim indicator</i>
12	<i>Altimeter</i>	34	<i>Flaps control switch</i>
13	<i>GPS</i>	35	<i>Flaps position indicator</i>
14	<i>Magnetic compass</i>	36	<i>Throttle</i>
15	<i>Fuel pressure gauge</i>	37	<i>Choke</i>
16	<i>Engine RPM indicator</i>	38	<i>Fuel selector valve</i>
17	<i>Cockpit light</i>	39	<i>Parking brake</i>
18	<i>Fuel quantity indicator – LH tank</i>	40	<i>Carburetors preheating</i>
19	<i>Oil pressure gauge</i>	41	<i>Cabin heating</i>
20	<i>ELT control unit and buzzer</i>	42	<i>Aileron trim indicator</i>
21	<i>Oil temperature gauge</i>	43	<i>Transponder</i>
22	<i>Fuel quantity indicator – RH tank</i>	44	<i>Circuit breakers *</i>

* Switches and circuit breakers detailed description is in this Supplement, page 6 of 8.

7.12 Electrical system

Circuit breakers and switches

LEFT PART OF INSTRUMENT PANEL	MASTER BAT	<i>master battery - transceiver - intercom</i>	switch	-
	MASTER GEN	<i>master generator</i>	switch	-
	ENG INSTR	<i>engine instruments</i>	switch	-
	FLT INSTR	<i>- attitude indicator - directional gyro - turn indicator</i>	switch	-
	AVIONICS	<i>- transponder - GPS - CDI</i>	switch	-
	FUEL P	<i>fuel pump</i>	Switch	-
	NAV L	<i>navigation lights</i>	Switch	-
	STROBE	<i>strobe lights</i>	Switch	-
	LDG L	<i>landing light</i>	Switch	-
	COCKPIT L	<i>cockpit light</i>	Switch	-
	INSTR L	<i>instruments lighting</i>	dimmer	-
RIGHT PART OF INSTRUMENT PANEL	COMM	<i>transceiver</i>	circuit breaker	5A
	IC	<i>intercom</i>	circuit breaker	1A
	ENG INSTR	<i>engine instruments</i>	circuit breaker	1A
	NAV	<i>navigation device</i>	circuit breaker	2A
	GPS		circuit breaker	3A
	XPDR	<i>transponder</i>	circuit breaker	5A
	CDI	<i>course deviation indicator</i>	circuit breaker	2A
	ATT	<i>attitude indicator</i>	circuit breaker	1A
	DG	<i>directional gyro</i>	circuit breaker	2A
	TURN INDIC	<i>turn indicator</i>	circuit breaker	1A
	FUEL P	<i>fuel pump</i>	circuit breaker	3A
	FLAPS		circuit breaker	3A
	TRIM	<i>- aileron trim - elevator trim</i>	circuit breaker	2A
	STROBE	<i>strobe lights</i>	circuit breaker	5A
	NAV L	<i>navigation lights</i>	circuit breaker	5A
	LDG L	<i>landing light</i>	circuit breaker	4A
	12 V	<i>socket 12V</i>	circuit breaker	5A
	INT L	<i>- instruments lighting - cockpit light</i>	circuit breaker	2A

7.13 Instruments and Avionics

The aircraft is equipped with instruments as follows:

Airspeed indicator

Altimeter

Vertical speed indicator

Magnetic compass CM24

Electric attitude indicator

Electric directional gyror

Electric turn coordinator

CDI

Engine RPM indicator

Oil pressure and temperature gauges

Fuel pressure and quantity gauges

CHT indicator

Voltmeter

Engine hours counter

The aircraft is equipped with avionics as follows:

Transceiver - Garmin SL30

Intercom - PS Engineering PM3000

Transponder - Garmin GTX328

GPS - Garmin Aera560

ELT - King AK451

NOTE

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

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: 248 °F