TABLE OF CONTENTS

2 Limitations

2.1 Introduction 2-3
2.2 Airspeed Limitation 2-3
2.3 Airspeed Indicator Marking 2-4
2.4 Power Plant 2-5
2.5 Power Plant Instrument Marking 2-6
2.6 Miscellaneous Instrument Marking 2-6
2.7 Weight Limits 2-7
2.8 Centre of Gravity 2-7
2.9 Approved Maneuvers 2-8
2.10 Maneuvering Load Factors 2-8
2.11 Flight Crew 2-8
2.12 Kind of Operation 2-9
2.13 Fuel Limits 2-10
2.13.1 Fuel Capacity 2-10
2.13.2 Approved Fuel Grades 2-10
2.14 Oil Limits 2-11
2.15 Maximum Number of Passengers 2-11
2.16 Electrical System Limitations 2-11
2.17 Other Limitations 2-11
2.18 Limitation Placards 2-12

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2.1 Introduction

Section 2 contains operation limitation, instrument marking and basic placards necessary for safe operation of airplane and its engine, standard systems and equipment. Limitation for optional systems and equipment are stated in section 9 - Supplements.

2.2 Airspeed Limitation

Airspeed limitations and their meaning for operation are stated in the table below:

Airspeed		KIAS	km/h IAS	Meaning
V_{NE}	Never exceed speed	146	270	Do not exceed this speed in any operation.
V_C	Design cruising speed	115	214	Do not exceed this speed, with exception of flight in smooth air, and even then only with increased caution.
V_A	Design maneuvering speed	90	167	Do not make full or abrupt control movement above this speed, because under certain conditions the airplane may be overstressed by full control movement.
V_{FE}	Maximum flap extended speed	70	130	Do not exceed this speed with the given flap setting.
V_{S0}	Stall speed	39	73	Flaps in 50°position at maximum take-off weight.

2.3 Airspeed Indicator Marking

Airspeed indicator markings and their color-code significance are shown in the table below:

Marking	Range		Meaning
	KIAS	km/h IAS	
Red line	39	73	V_{S0} at maxim weight (flaps in landing position 50°)
White arc	39 – 70	73 - 130	Operating range with extended flaps. Lower limit - V_{S0} at maximum (flaps in landing position 50°) Upper limit - V_{FE}
Green arc	42 - 115	78 - 214	Normal operating range Lower limit - V_{S1} at maximum weight (flaps retracted - 0°) Upper limit – V_C
Yellow arc	115 – 146	214 - 270	Maneuvers must be conducted with caution and only in smooth air
Red line	146	270	Maximum speed for all operations - V_{NE}.

2.4 Power Plant

Engine manufacturer:	BRP-Powertrain GmbH & Co KG	
Engine type:	ROTAX 912 ULS	
Power:	max. take-off	73.5 kW / 100 HP
	max. continuous	69.0 kW / 93 HP
Engine speed:	max. take-off	5800 RPM max. 5 minutes
	max. continuous	5500 RPM
	idle	min. 1400 RPM
Cylinder head temperature:	maximum	128°C / 262 °F see Note on page 2-6
Coolant temperature:	maximum	120°C / 248 °F see Note on page 2-6
Oil temperature:	maximum	130°C / 266 °F
	optimum operation	90 - 110°C / 190 - 230°F
Oil pressure:	maximum	102 PSI / 7 bar (for short period admissible at cold start)
	minimum	0.8 bar / 12 PSI
	optimum operation	2 - 5 bar / 29 - 73 PSI
Fuel pressure:	maximum	5.8 PSI / 0.4 (0.5*)bar
	minimum	2.2 PSI / 0.15 bar
Fuel grades:	see para 2.13.2 Approved Fuel Grades	
Oil grades:	see para 2.14 Oil Limits	
Engine start, operating temperature		
	maximum	50°C / 120°F (ambient temperature)
	minimum	-25°C / -13°F (oil temperature)
Propeller manufacturer:	WOODCOMP s.r.o.	
Propeller type:	KLASSIC 170/3/R 3-blade, composite, on-ground adjustable	
Propeller diameter:		1712 mm / 68 in
Propeller blade pitch:		17°30'

* Applicable only for fuel pump from S/N 11.0036

NOTE

The coolant temperature (instead of CHT) is measured on engines from S/N 6 781 410 inclusive or on engines equipped with cylinder heads of P/N 413185 (cylinder head position 2/3) and 413195 (cylinder head postion 1/4).

2.5 Power Plant Instrument Marking

The color-code of instruments is shown in the following table:

Instrument	Units	Red line	Green arc	Yellow arc	Red line
		Lower limit	Normal operation range	Caution range	Upper limit
RPM indicator	RPM	-	1400 - 5500	5500 - 5800	5800
Oil temperature indicator	°C	-	90 - 110	50 – 90 110 - 130	130
	°F	-	190 - 230	120 - 190 230 - 266	266
Oil pressure indicator	bar	0,8	2 - 5	0,8 – 2 5 - 7	7
	PSI	12	29 - 73	12 - 29 73 - 102	102
Fuel pressure	bar	0.15	0.15 – 0.4 (0.5*)	-	0.4 (0.5*)
	PSI	2.2	2.2 – 5.8	-	5.8
Cylinder head temperature see Note above	°C	-	-	-	128
	°F	-	-	-	262
Coolant temperature see Note above	°C	-	-	-	120
	°F	-	-	-	248

* Applicable only for fuel pump from S/N 11.0036

2.6 Miscellaneous Instrument Marking

There are no other instruments with color marking.

2.7 Weight Limits

Maximum empty weight..... 405 kg

Maximum take-off weight..... 600 kg

Maximum landing weight..... 600 kg

Maximum weight in baggage compartment..... 25 kg

2.8 Centre of Gravity

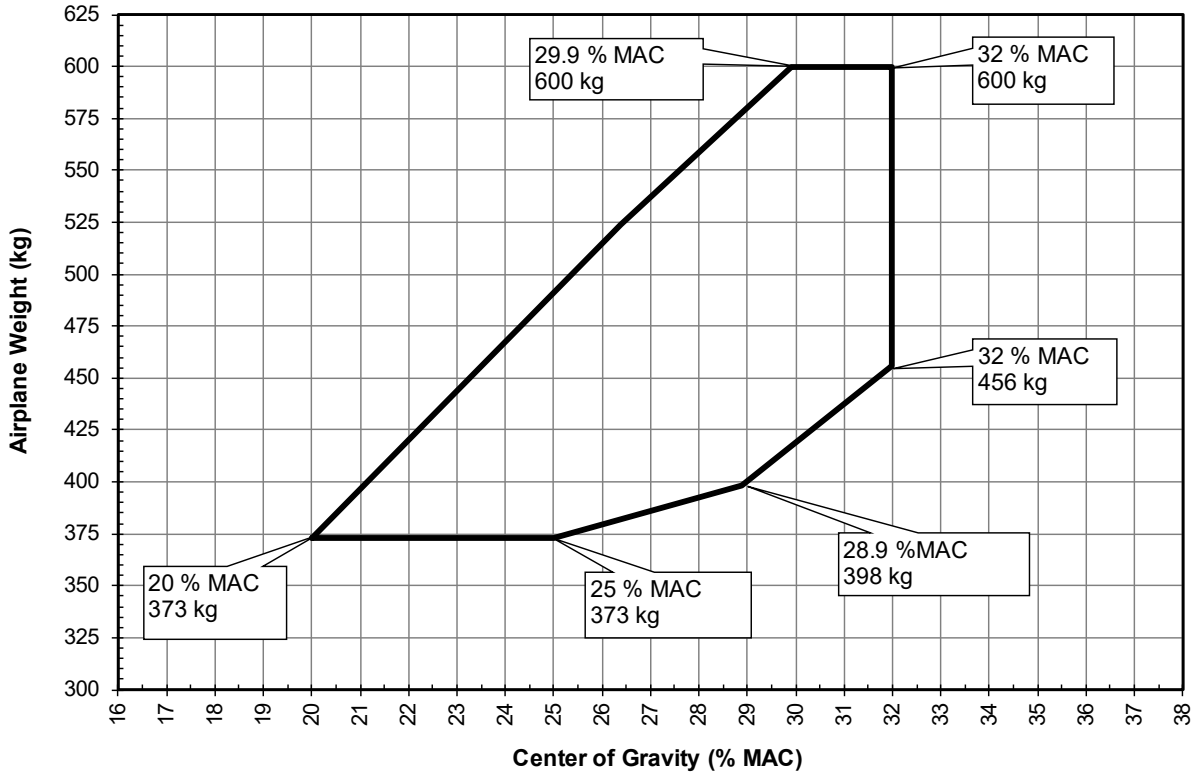


Figure 2-1 Centre of gravity

Reference datum is the wing leading edge.

WARNING

DO NOT EXCEED MAXIMUM WEIGHTS AND LIMITATION OF CENTER OF GRAVITY! THEIR EXCEEDING LEADS TO AIRPLANE OVERLOADING AND TO DEGRADATION OF FLIGHT CHARACTERISTICS AND DETERIORATION OF MANOEUVRABILITY.

2.9 Approved Maneuvers

SportStar RTC airplane is approved to perform the following maneuvers:

- Steep turns up to bank of 60°
- Climbing turns
- Lazy eights
- Stall (except for steep stalls)
- Normal flight maneuvers

WARNING

AEROBATICS AS WELL AS INTENTIONALL SPINS ARE PROHIBITED!

2.10 Maneuvering Load Factors

Maximum positive load factor.....4.0

Maximum negative load factor .....-2.0

2.11 Flight Crew

Minimum flight crew .....1 pilot

Minimum weight of flight crew .....55 kg

Maximum weight of flight crew .....see sec. 6, para 6.3

WARNING

DO NOT EXCEED MAXIMUM WEIGHTS AND LIMITATION OF CENTER OF GRAVITY! THEIR EXCEEDING LEADS TO AIRPLANE OVERLOADING AND TO DEGRADATION OF FLIGHT CHARACTERISTICS AND DETERIORATION OF MANOEUVRABILITY.

2.12 Kind of Operation

The airplane is standardly approved for VFR daylight flights.

WARNING

NIGHT FLIGHTS ACCORDING TO VFR, FLIGHTS ACCORDING TO IFR AND INTENTIONAL FLIGHTS UNDER ICING CONDITIONS ARE PROHIBITED.

Instruments and equipment for daylight flights according to VFR:

- 1 Airspeed indicator (the color marking according to para 2.3)
- 1 Sensitive barometric altimeter
- 1 Magnetic compass
- 1 Fuel gauge indicator for each fuel tank
- 1 Oil temperature indicator
- 1 Oil pressure indicator
- 1 Cylinder head temperature indicator
- 1 Engine speed indicator
- 1 Safety harness for every used seat

CAUTION

ADDITIONAL EQUIPMENT NECESSARY FOR AIRPLANE OPERATION IS GIVEN IN APPROPRIATE OPERATION REGULATION OF AIRPLANE OPERATOR'S COUNTRY.

2.13 Fuel Limits

2.13.1 Fuel Capacity

Fuel tank capacity (each) ..... 60 l

Total fuel capacity ..... 120 l

Total usable fuel ..... 118 l

Total unusable fuel ..... 2 l (1 l per tank)

NOTE

It is not recommended to fully tank the fuel tanks. Due to fuel thermal expansions keep about 8.0 liters of free space in the tank to prevent fuel bleed through the vents in the wing tips. This should be adhered especially when cold fuel from an underground tank is tanked.

2.13.2 Approved Fuel Grades

Automotive gasoline with octane index min. RON 95 (or anti-knock index min. AKI 91) meets the following standards:

- Europe – EN 228 Super, EN 228 Super plus
- Canada – CAN/CGSB-3.5 Quality 3
- USA – ASTM D4814
- Russia – R51866-2002

Aviation gasoline:

- AVGAS 100 LL aviation fuel according to ASTM D910.
- AVGAS UL91 (unleaded) aviation fuel according to ASTM D7547.

CAUTION

APPROVED AND UP TO DATE FUEL GRADES ARE STATED IN THE ACTUAL ISSUE OF SERVICE INSTRUCTION SI-912-016.

NOTE

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 leads sediments in the oil system. Thus it should only be used when automotive gasoline is unavailable.

Risk of vapor formation if using winter fuel for summer operation.

2.14 Oil Limits

Performance classification SG or higher according to API.

Oil volume:

- minimum ..... 2.5 l (min. mark on the dip stick)
- maximum ..... 3.0 l (max. mark on the dip stick)

CAUTION

RECOMMENDED OIL GRADES ARE STATED IN THE ACTUAL ISSUE OF SERVICE INSTRUCTION SI-912-016.

2.15 Maximum Number of Passengers

Maximum number of passengers including pilot.. 2

2.16 Electrical System Limitations

SOCKET and **BEACONS** switches must be in **OFF** position during taxiing.

SOCKET switch must be in **OFF** position during landing.

2.17 Other Limitations

SMOKING IS PROHIBITED on the airplane board.

2.18 Limitation Placards

The following placards are located on the titling canopy:

This Light Sport Aircraft has been approved only for VFR day flights under no icing conditions.

Aerobatics and intentional spins are prohibited!

AIRSPEED IAS	
Never exceed V_{NE}	146 kts
Design Manoeuvring V_A	90 kts
Max. Flap Extended V_{FE}	70 kts
Stalling V_{S0}	39 kts

ENGINE SPEED	
Max. Take-off (max. 5 min.)	5800 rpm
Max. Continuous	5500 rpm
Min. Idling	1400 rpm

Unusable quantity of fuel	2 litres

This Light Sport Aircraft has been approved only for VFR day flights under no icing conditions.

Aerobatics and intentional spins are prohibited!

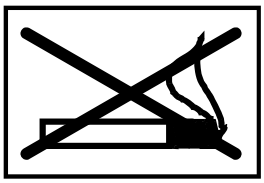
AIRSPEED IAS	
Never exceed V_{NE}	270 km/h
Design Manoeuvring V_A	167 km/h
Max. Flap Extended V_{FE}	130 km/h
Stalling V_{S0}	73 km/h

ENGINE SPEED	
Max. Take-off (max. 5 min.)	5800 rpm
Max. Continuous	5500 rpm
Min. Idling	1400 rpm

Unusable quantity of fuel	2 litres

LOAD LIMITS						
Max.take-off weight					600	kg
Empty weight					335	kg
Max.baggage weight					25	kg
PERMITTED CREW WEIGHT						[kg]
Fuel quantity ltr.		120	100	75	50	25
Baggage weight	max. 25 kg	154	168	186	204	222
	1/2 12 kg	167	181	199	217	235
	o baggage	179	193	211	229	247
Fuel reserve (1/8 on the fuel indicator)					8 litres	

The following placards are located on the instrument panel



BEFORE TAKE-OFF PUSH CANOPY HANDLE UP TO CHECK CANOPY FULL CLOSING

Placard color: red.

The following placards are located in the baggage compartment:

Placard color: green.

Placard color: red. (Only if fire extinguisher installed)

The following placard is located on the left and right side of the canopy frame:

NOTE

Other placards and labels are shown in Airplane Maintenance Manual for SportStar RTC airplane.

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