AIRCRAFT OPERATING INSTRUCTIONS FOR
SPORTSTAR LIGHT SPORT AIRCRAFT

Serial number: 

Registration mark: 

Document number:  S2006AOIUS 

Date of issue: January 15, 2006

This manual must be on the airplane board during operation. This manual contains information which must be provided to the pilot and also contains supplementary information provided by the airplane manufacturer – Evektor – Aerotechnik a.s.

This aircraft must be operated in compliance with the information and limitations stated in this manual.
0. **TECHNICAL INFORMATION**

0.1 **Log of Revisions**

All revisions or supplements to this manual, except actual weighing data, are issued in form of revisions, which will have new or changed pages as appendix and the list of which is shown in the Log of Revisions table.

The new or changed text in the revised pages will be marked by means of black vertical line on the margin of page and the revision number and date will be shown on the bottom margin of page.

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<td>8</td>
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1.1 Introduction

**PARTICIPANT’S RESPONSIBILITY**

There are inherent risks in participating in aviation activities, these risks are significant, up to and potentially including death. Operators and passengers of recreational aviation aircraft, by participation, accept the risks inherent in such participation of which the ordinary prudent person is or should be aware. Pilots and passengers have a duty to exercised good judgment and act in a responsible manner while using the aircraft and to obey all oral or written warnings, or both, prior to and/or during use of the aircraft.

This Flight manual has been prepared to provide pilots and instructors with information for safe and efficient operation of the SPORTSTAR airplane. It also contains supplementary information considered to be important by the airplane manufacturer.

1.2 Certification basis


This type of aircraft complies with the Czech UL—2 airworthiness requirements, it has been type certified by the Light Aircraft Association of the Czech Republic and the type certificate ULL 07/2003 was issued in December 18th, 2003.

1.2.1 Data location

The certification documentation is available from the US General importer or airplane manufacturer on a request of competent aviation authority and/or Designated Airworthiness Representative.

Contact address:

**US General Importer:**
Sport Aircraft International LLC
804 Water Street
Kerrville, Texas 78028
phone: 001 830 896 8910
fax: 001 830 896 8913
e-mail: sportac@ktc.com

**Airplane Manufacturer:**
Evektor — Aerotechnik, a.s.
Letecká 1384
686 04 Kunovice
Czech Republic
tel.: +420 572 537 111
fax: +420 572 537 900
e-mail: marketing@evektor.cz
1.3 Warnings, cautions, notes

The following informations apply to warnings, cautions and notes used in the Flight manual:

**WARNING**

MEANS THAT NON-OBSERVATIONS OF THE CORRESPONDING PROCEDURE LEADS TO AN IMMEDIATE OR IMPORTANT DEGRADATION OF THE FLIGHT SAFETY.

**CAUTION**

MEANS THAT NON-OBSERVATIONS OF THE CORRESPONDING PROCEDURE LEADS TO A MINOR OR TO A MORE OR LESS LONG TERM DEGRADATION OF THE FLIGHT SAFETY.

**NOTE**

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

1.4.1 Airplane description

SPORTSTAR airplane is an all-metal low-wing of semimonocoque structure with two side by side seats and nose wheel landing gear. For further description see Section 7 – Airplane and system description.

1.4.2 Powerplant

The standard powerplant consists of ROTAX 912 (80 hp) engine (100 hp optionally) and WOODCOMP KLASSIC 170/3/R propeller. For further description see Section 7 – Airplane and system description. For concrete engine and propeller type – see Section 9 – Supplements – Airplane description.

1.4.3 Main technical data

Wing

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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<tbody>
<tr>
<td>Span</td>
<td>28.37 ft</td>
</tr>
<tr>
<td>Area</td>
<td>112.7 sq.ft</td>
</tr>
<tr>
<td>MAC depth</td>
<td>4.1 ft</td>
</tr>
<tr>
<td>Wing loading</td>
<td>10.76 lbs/sq.ft</td>
</tr>
<tr>
<td>Aileron – area</td>
<td>2.62 sq.ft</td>
</tr>
<tr>
<td>Flap – area</td>
<td>5.60 sq.ft</td>
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Fuselage

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<tr>
<td>Length</td>
<td>19.62 ft</td>
</tr>
<tr>
<td>Width</td>
<td>3.55 ft</td>
</tr>
<tr>
<td>Height</td>
<td>7.66 ft</td>
</tr>
<tr>
<td>Cockpit canopy max. width</td>
<td>3.87 ft</td>
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Horizontal tail unit

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<tr>
<td>Span</td>
<td>8.20 ft</td>
</tr>
<tr>
<td>HTU Area</td>
<td>20.88 sq.ft</td>
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<tr>
<td>Elevator area</td>
<td>8.40 sq.ft</td>
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Vertical tail unit

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</thead>
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<td>Height</td>
<td>4.07 ft</td>
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<tr>
<td>VTU Area</td>
<td>10.76 sq.ft</td>
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<td>Rudder area</td>
<td>4.31 sq.ft</td>
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Landing gear

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<td>Wheel track</td>
<td>6.12 ft</td>
</tr>
<tr>
<td>Wheel base</td>
<td>4.43 ft</td>
</tr>
<tr>
<td>Main and nose landing gear wheel diameter</td>
<td>14 in</td>
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</tbody>
</table>
1.4.4 Three-view drawing

Figure 1-1
1.5 Definitions and abbreviations

NOTE
The abbreviations on placards in the airplane cockpit, are printed in **BOLD CAPITAL LETTERS** in the text of this Flight manual.

- **ACCU**: accumulator
- **ALT ENC**: encoding altimeter
- **ATC**: air traffic control
- **bar**: bar 1 bar = 100 kPa
- **BEACON**: anti—collision beacon
- **˚C**: Celsius degree
- **CAS**: calibrated airspeed
- **CLOCK**: aircraft clock
- **ft**: foot 1 ft = 0.305 m
- **GPS**: global positioning system
- **HTU**: horizontal tail unit
- **IAS**: indicated airspeed
- **IC**: intercom
- **IFR**: instrument flight rules
- **ISA**: international standard atmosphere
- **kg**: kilogram
- **KIAS**: indicated airspeed in knots
- **KCAS**: calibrated airspeed in knots
- **mph**: mile per hour
- **mph CAS**: calibrated airspeed in miles per hour
- **km/h CAS**: calibrated airspeed in km/h
- **kts**: knots 1 kt = 1.852 km/h
- **litres**: litre
- **lbs**: pounds 1 lb = 0.45 kg
- **m**: meter
- **MAC**: mean aerodynamical chord
- **max.**: maximum
- **min.**: minimum or minute
- **mm**: milimeter
- **m/s**: meter per second
- **OAT**: outside air temperature
- **OFF**: system is switched off or control element is in off—position
- **ON**: system is switched on or control element is in on—position
- **Pa**: pascal 1Pa = 1N/m²
PSI  pound per sq.in (1PSI = 6.89 kPa)
RPM  revolutions per minute
RWY  runway
sq.ft  foot squared
sq.m  meter squared
VA  manoeuvring airspeed
VFE  maximum flap extended speed – flaps in 50° position
VFR  visibility flight rules
VLOF  airplane lift-off speed
V–METER  voltmeter
VNE  never exceed speed
VNO  maximum structural cruising speed
VSO  stall speed with wing flaps in 50° position
VS1  stall speed with wing flaps in 0° position
VTU  vertical tail unit
VX  best angle-of-climb speed
VY  best rate-of-climb speed
XPDR  transponder
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2. LIMITATIONS

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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

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

<table>
<thead>
<tr>
<th>Speed</th>
<th>KIAS</th>
<th>mph IAS</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>( V_{NE} )</td>
<td></td>
<td></td>
<td>Never exceed speed ( 146 ) ( 168 ) ( \text{Do not exceed this speed in any operation.} )</td>
</tr>
<tr>
<td>( V_{NO} )</td>
<td></td>
<td></td>
<td>Maximum structural cruising speed ( 103 ) ( 118 ) ( \text{Do not exceed this speed, with exception of flight in smooth air, and even then only with increased caution.} )</td>
</tr>
<tr>
<td>( V_{A} )</td>
<td></td>
<td></td>
<td>Manoeuvring speed ( 86 ) ( 99 ) ( \text{Do not make full or abrupt control movement above this speed, because under certain conditions the aircraft may be overstressed by full control movement.} )</td>
</tr>
<tr>
<td>( V_{FE} )</td>
<td></td>
<td></td>
<td>Maximum flap extended speed ( 70 ) ( 81 ) ( \text{Do not exceed this speed with the given flap setting.} )</td>
</tr>
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</table>

2.3 Airspeed indicator marking

Airspeed indicator markings and their colour–code significance are shown in the table below:

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<thead>
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<th>Range</th>
<th>KIAS</th>
<th>mph IAS</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red line</td>
<td>( 37 )</td>
<td></td>
<td>43</td>
<td>( V_{S0} ) at maximum weight (flaps in landing position ( 50^\circ ))</td>
</tr>
<tr>
<td>White arc</td>
<td>( 37 – 70 )</td>
<td>( 43 – 81 )</td>
<td>Operating range with extended flaps. Lower limit ( V_{S0} ) at maximum weight (flaps ( 50^\circ )) Upper limit ( V_{FE} )</td>
<td></td>
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## Limitations

### Marking

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<th>Range</th>
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<td>KIAS</td>
<td>mph IAS</td>
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<tr>
<td>Green arc</td>
<td>42 – 103</td>
<td>49 – 118 Normal operation range</td>
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<td></td>
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<td>Lower limit – $V_{S1}$ at maximum weight (flaps 0˚)</td>
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<td></td>
<td>Upper limit – $V_{NO}$</td>
</tr>
<tr>
<td>Yellow arc</td>
<td>103 – 146</td>
<td>118 – 168 Manoeuvres must be conducted with caution and only in smooth air</td>
</tr>
<tr>
<td>Red line</td>
<td>146</td>
<td>168 Maximum speed for all operations – $V_{NE}$.</td>
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### Powerplant

**Engine manufacturer:** Bombardier – Rotax GMBH  
**Engine type:** ROTAX 912 UL or S  
**Power:**  
- Maximum take-off: 80 HP or 100 HP  
- Maximum continuous: 78 HP or 93.8 HP  
**Engine speed:**  
- Maximum take-off: 5800 RPM max. 5 minutes  
- Maximum continuous: 5500 RPM  
- Idle: 1400 RPM  
**Cylinder head temperature:** maximum: 135 °C / 275 °F  
**Oil temperature:**  
- Maximum: 150 or 130 °C / 302 or 266 °F  
- Optimum operation: 90 – 110 °C / 190 – 230 °F  
**Oil pressure:**  
- Maximum: 7 bar / 102 PSI  
- Minimum: 0.8 bar / 12 PSI  
- Optimum operation: 2 – 5 bar / 29 – 73 PSI  
**Fuel pressure:**  
- Minimum: 0.15 bar / 2.2 PSI  
**Fuel grades:** see 2.13, page 2–8  
**Oil grades:** see 2.14, page 2–8  
**Reducer gear ratio:** 2.43 : 1  
**Propeller manufacturer:** WOODCOMP s.r.o.  
**Propeller type:** KLASSIC 170/3/R  
- 3 blade, composite, on-ground adjustable  
**Propeller diameter:** 68 in / 1700 mm  
**Maximum prop speed:** 2600 RPM

**NOTE**
If installed a different propeller type – see section 9 – Supplements for propeller limitations.
2.5 Powerplant instrument marking

The colour—code of instruments is shown in the following table:

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Units</th>
<th>Red line</th>
<th>Green arc</th>
<th>Yellow arc</th>
<th>Red line</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Lower limit</td>
<td>Normal operation range</td>
<td>Caution range</td>
<td>Upper limit</td>
</tr>
<tr>
<td>RPM indicator</td>
<td>RPM</td>
<td>1400 ÷ 5500</td>
<td>5500 ÷ 5800</td>
<td>5800</td>
<td></td>
</tr>
<tr>
<td>Oil temperature indicator</td>
<td>°C</td>
<td>90 ÷ 110</td>
<td>50 ÷ 90 110 ÷ 140</td>
<td>140</td>
<td></td>
</tr>
<tr>
<td>ROTAX 912 UL / ROTAX 912 ULS</td>
<td></td>
<td>50 ÷ 90 110 ÷ 130</td>
<td>130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil temperature indicator</td>
<td>°F</td>
<td>190 ÷ 230</td>
<td>120 ÷ 190 230 ÷ 284</td>
<td>284</td>
<td></td>
</tr>
<tr>
<td>ROTAX 912 UL / ROTAX 912 ULS</td>
<td></td>
<td>120 ÷ 190 230 ÷ 266</td>
<td>266</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil pressure indicator</td>
<td>bar</td>
<td>2 ÷ 5</td>
<td>0.8 ÷ 2 5 ÷ 7</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PSI</td>
<td>29 ÷ 73</td>
<td>12 ÷ 29 73 ÷ 102</td>
<td>102</td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>°C</td>
<td></td>
<td>150 / 135</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROTAX 912 UL / temperature</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROTAX 912 UL / temperature</td>
<td>°F</td>
<td></td>
<td>302 / 275</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.6 Miscellaneous instrument marking

There are not other instruments with colour marking.

2.7 Weight

Empty weight (standard equipment) ............ 695 lbs ± 2 % 315 kg ± 2 %

Maximum take—off weight ..................... 1213 lbs 550 kg

Maximum landing weight ...................... 1213 lbs 550 kg

Maximum weight in baggage compartment ..... 55 lbs 25 kg

WARNING

DO NOT EXCEED MAXIMUM WEIGHTS! THEIR EXCEEDING LEADS TO AIRPLANE OVERLOADING AND TO DEGRADATION OF FLIGHT CHARACTERISTICS AND DETERIORATION OF MANOEUVRABILITY.
Section 2
Limitations

2.8 Centre of gravity
Empty airplane C.G. position (standard equipment) ............ 20 ± 2 %MAC
Operating C.G. range ................................................. 20 to 34 %MAC
Reference datum is the wing leading edge.

2.9 Approved manoeuvres
SPORTSTAR airplane is approved to perform the following manoeuvres:
- steep turns up to bank angle of 60°
- climbing turns
- lazy eights
- stalls (except for steep stalls)
- normal flight manoeuvres

WARNING
AEROBATICS AS WELL AS INTENTIONAL SPINS ARE PROHIBITED!

2.10 Manoeuvring load factors
Maximum positive load factor ........................................ 4.0
Maximum negative load factor ....................................... −2.0

2.11 Flight crew
Minimum crew ......................................................... 1 pilot
Minimum weight of crew ........................................... 121 lbs 55 kg
Maximum weight of crew ........................................... acc. to point 6.3

WARNING
DO NOT EXCEED MAXIMUM WEIGHTS! THEIR EXCEEDING LEADS TO AIRPLANE OVERLOADING AND TO DEGRADATION OF FLIGHT CHARACTERISTICS AND DETERIORATION OF MANOEUVRABILITY.
2.12 Kinds of operation

The airplane is standardly approved for VFR daylight flights.

**WARNING**

NIGHT FLIGHTS ACCORDING TO VFR, FLIGHTS ACCORDING TO IFR (BY INSTRUMENTS) ARE APPROVED ONLY WHEN INSTRUMENTATION REQUIRED FOR SUCH FLIGHTS IS INSTALLED AND FLIGHT PERFORMED BY A PILOT WITH APPROPRIATE RATING! INTENTIONAL FLIGHTS UNDER ICING CONDITIONS ARE PROHIBITED.

Instruments and equipment for daylight flights according to VFR:
1. Airspeed indicator (the colour marking according to par. 2.3)
1. Sensitive barometric altimeter
1. Magnetic compass
1. Fuel gauge indicator
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.
Section 2
Limitations

2.13 Fuel

Fuel tank volume (each) .................. 15.85 U.S. gallons 60 litres
Total ..................................... 31.7 U.S. gallons 120 litres
Usable fuel ................................. 31.2 U.S. gallons 118 litres
Unusable fuel .............................. 0.5 U.S. gallons 2.0 litres
(0.25 US gal / 1 liter per tank)

NOTE
It is not recommended to fully tank the fuel tanks. Due to fuel thermal expansion keep about 2.11 U.S. gallons (8.0 litres) of free space in the tank to prevent fuel bleed through the vents in the wing tips thus preventing environmental contamination. This should be adhered especially when cold fuel from an underground tank is tanked.

Approved fuel grades:
- automotive petrol with min RON 95
- EN 228 Premium
- EN 228 Premium plus
- AVGAS 100 LL
Due to higher lead content in AVGAS, the wear of valve seats and deposits in the combustion chamber and lead sediments in the lubrication system will increase. Therefore, use AVGAS only if you encounter problem with vapour lock or if the other fuel types are not available

For other suitable fuel types refer to the engine Operator’s Manual

NOTE
Use only fuel suitable for the respective climatic zone. Risk of vapour formation if using winter fuel for summer operation.

2.14 Oil

Performance classification SF, SG according to API

Oil volume:
- minimum ................................. 0.53 U.S. gallons 2.0 litres
- maximum ................................. 0.79 U.S. gallons 3.0 litres

2.15 Maximum number of passengers

Maximum number of passengers including pilot . 2

January 15, 2006
2.16 Other limitations

SMOKING IS PROHIBITED on the airplane board.

PASSENGER NOTICE
This aircraft conforms to ASTM Consensus Standards of airworthiness developed and maintained by the aviation community under ASTM Technical Committee F37.

PASSENGER WARNING!
This aircraft was manufactured in accordance with Light Sport Aircraft airworthiness standards and does not conform to standard category airworthiness requirements.
Section 2
Limitations

2.17 Limitation placards

The following placard is located on the instrument panel:

![Placard Image]

**PASSENGER NOTICE**
THIS AIRCRAFT CONFORMS TO ASTM CONSENSUS STANDARDS OF AIRWORTHINESS DEVELOPED AND MAINTAINED BY THE AVIATION COMMUNITY UNDER ASTM TECHNICAL COMMITTEE F37.

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

The following placard is located in the baggage compartment:

![Placard Image]

MAX.
55 lbs / 25 kg
The following placards are located on the tilting canopy:

**AIRSPEED IAS**

- Never exceed 146 kts
- Maneoeuvring 86 kts
- Max. Flap Extended 70 kts
- Stalling 37 kts

**ENGINE SPEED**

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

**LOAD LIMITS**

<table>
<thead>
<tr>
<th>Fuel quantity</th>
<th>U.S. gal.</th>
<th>lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>max. 55 lbs</td>
<td>272</td>
<td>1213</td>
</tr>
<tr>
<td>1/2 26 lbs</td>
<td>301</td>
<td>694</td>
</tr>
<tr>
<td>No baggage</td>
<td>328</td>
<td>50</td>
</tr>
</tbody>
</table>

**PERMITTED CREW WEIGHT**

- Max. take-off weight 1213 lbs
- Empty weight 694 lbs
- Max. baggage weight 50 lbs

Unusable quantity of fuel 0.5 U.S. gallons (2.0 litres)

**NOTE**

The values stated on the placard “LOAD LIMITS” are valid for the empty weight of the airplane with standard equipment. The placard with values valid for the actual empty weight of the airplane will be placed in the cockpit.

Other placards and labels are shown in Aircraft Maintenance and Inspection Procedures.
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Intentionally left blank
3.1 Introduction
Section 3 describes operations and procedures for emergency situation solutions that could possibly occur during airplane operation.

3.2 Speeds for performing emergency procedures
Airspeed for the best gliding ratio (flaps retracted) 57 KIAS (66 mph IAS)

Precautionary landing
(engine running, flaps in landing position – 50°) 52 KIAS (60 mph IAS)

Emergency landing
(engine stopped, flaps in landing position – 50°) 52 KIAS (60 mph IAS)

3.3 Engine failure

3.3.1 Engine failure at take-off run
1. THROTTLE lever ......................... idle
2. Brakes .................................... as necessary
3. FUEL SELECTOR ....................... OFF
4. Ignition ................................. OFF
5. MASTER SWITCH ..................... OFF

3.3.2 Engine failure at take-off
1. Gliding speed:
   with flaps in take-off position (15°) ........ min. 52 KIAS (60 mph IAS)
   with flaps retracted (0°) .................... min. 57 KIAS (66 mph IAS)
2. Altitude:
   – Land in take-off direction if below 150 ft:
   – Land in take-off direction or you can perform turn up to 90° if altitude is 150 – 400 ft:
   – You can try start engine if altitude is above 250 ft
   – You can perform turn up to 180° if altitude is above 400 ft:
3. THROTTLE lever ....................... idle
4. Flaps .................................... as needed
5. FUEL SELECTOR ....................... OFF
6. Ignition ................................. OFF
7. ATC .................................... report
8. MASTER SWITCH ................................ OFF
9. After touch down .............................. brake as needed

3.3.3 Engine failure in flight
1. Gliding speed ............................ 57 KIAS (66 mph IAS)
2. Altitude ................................. take a decision and carry out:
   -- Engine starting in flight -- paragraph 3.4, page 3–4
   -- Emergency landing -- paragraph 3.8.1, page 3–8

3.4 Engine starting at flight

**NOTE**
It is possible to start the engine by means of the starter within the whole range of operation speeds as well as flight altitudes. The engine started up immediately after switching the ignition to **START** position.

If the engine is shut down, the altitude loss during engine starting can reach up to 1000 ft.

1. Gliding speed ............................ 57 KIAS (66 mph IAS)
2. Altitude ................................. check
3. MASTER SWITCH ........................ **ON**
4. Unnecessary electrical equipment ......... switch off
5. FUEL SELECTOR ........................ **LEFT**
6. Choke ................................. as needed
7. THROTTLE lever ........................ idle (choke opened) or increased idle (choke closed)

**The propeller is rotating:**
8. Ignition ................................. **BOTH**

**The propeller is not rotating:**
9. Ignition ................................. **START**
10. If engine starting does not occur, increase gliding speed up to 108 KIAS (124 mph IAS) (see **NOTE**), so that air-flow turns the propeller and engine will start.
11. Ignition ................................. **BOTH**
12. If engine starting is unsuccessful, then continue according to paragraph 3.8.1 Emergency landing.
3.5 Engine fire

3.5.1 Fire on the ground

1. **FUEL SELECTOR** ....................... OFF
2. Brakes ........................................ brake
3. **THROTTLE** lever ......................... full
4. **HOT AIR** knob (if installed) .......... push

After the engine stops:
5. Ignition ........................................ OFF
6. **MASTER SWITCH** ....................... OFF
7. Airplane ....................................... leave
8. Manual extinguisher (if available) ......... use

3.5.2 Fire during take-off

1. **FUEL SELECTOR** ....................... OFF
2. **THROTTLE** lever ......................... full
3. Airspeed ....................................... 62 KIAS (71 mph IAS)
4. **HOT AIR** knob (if installed) .......... push

After the engine stops:
5. Gliding speed ............................... 52 KIAS (60 mph IAS)
6. Ignition ........................................ OFF
7. **MASTER SWITCH** ....................... OFF
8. Land
9. Airplane ....................................... leave
10. Manual extinguisher (if available) ....... use
Section 3
Emergency Procedures

3.5.3 Fire in flight

1. FUEL SELECTOR ......................... OFF
2. THROTTLE lever ....................... full
3. HOT AIR knob (if installed) ........ close
4. Gliding speed ......................... 57 KIAS (66 mph IAS)
5. Ignition ............................... OFF
6. ATC .................................. report if possible
7. MASTER SWITCH ..................... OFF

NOTE
For extinguishing the engine fire, you can perform slip under assumption that you have sufficient altitude and time.

WARNING
AFTER EXTINGUISHING THE ENGINE FIRE START ENGINE ONLY IF IT NECESSARY TO SAFE LANDING. FUEL LEAK IN ENGINE COMPARTMENT COULD CAUSE FIRE AND FIRE COULD RESTORE AGAIN.

8. If you start engine again, switch off all switches, switch on the MASTER SWITCH, and then subsequently switch on only equipment necessary to safe landing.

9. Emergency landing .................... carry out according to paragraph 3.8.1

10. Airplaine ............................. leave

11. Manual extinguisher (if available) ........ use as needed
3.6 Fire in the cockpit (if manual extinguisher available aboard)

1. Fire source ........................................ identify

2. MASTER SWITCH in case that the source of fire is electrical equipment. ............... OFF

3. Manual extinguisher ......................... use

4. After fire extinguishing ..................... aerate the cockpit

5. Carry out safety landing according to 3.8.2

**WARNING**
NEVER AGAIN SWITCH THE DEFECTIVE SYSTEM.

**NOTE**
If a defective electrical system circuit was detected as the fire source, then switch off appropriate circuit breaker and switch over MASTER SWITCH to ON position.

3.7 Gliding flight

**NOTE**
Gliding flight can be used for example in case of engine failure.

<table>
<thead>
<tr>
<th>Wing flaps position</th>
<th>Retracted (0°)</th>
<th>Take–off (15°)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airspeed</td>
<td>57 KIAS (66 mph IAS)</td>
<td>52 KIAS (60 mph IAS)</td>
</tr>
</tbody>
</table>
3.8 Emergency landing

3.8.1 Emergency landing – with non-operating engine
1. Airspeed .......................... 57 KIAS (66 mph IAS)
2. Landing area,.......................... choose, determine wind direction
3. Safety harness .......................... tighten up
4. Flaps .......................... landing position (50°)
5. Airspeed .......................... 48 KIAS (55 mph IAS)
6. Radiostation notify situation to ATC – if possible
7. FUEL SELECTOR ......................... OFF
8. Ignition .......................... OFF
9. MASTER SWITCH ......................... OFF before touch down

3.8.2 Safety landing – with engine operating
1. Area for landing .......................... choose, determine wind direction, carry out passage flight with speed of 59 KIAS (68 mph IAS), flaps in take-off position (15°)
2. Radiostation .......................... notify situation to ATC – if possible
3. Safety harness .......................... tighten up
4. Flaps .......................... landing position (50°)
5. Airspeed .......................... 48 KIAS (55 mph IAS)
6. Landing .......................... carry out
3.8.3 Landing with burst tire

**CAUTION**

WHEN LANDING AT HOLDING, KEEP THE WHEEL WITH BURST TIRE ABOVE THE GROUND AS LONG AS POSSIBLE BY MEANS OF AILERONS. IN CASE OF NOSE WHEEL BY MEANS OF ELEVATOR.

1. At running hold airplane direction by means of foot control and brakes

3.8.4 Landing with damaged landing gear

1. In case of nose landing gear damage touch down at the lowest possible speed and try to keep the airplane on main landing gear wheels as long as possible

2. In case of main landing gear damage touch down at he lowest possible speed and if possible keep direction at running

3.9 Unintentional spin recovery

**NOTE**

The airplane has not, when using normal techniques of pilotage, tendency to go over to spin spontaneously.

Standard procedure of recovery from spin:

1. **THROTTLE** lever ................. idle

2. Control stick ...................... ailerons – neutral position

3. Pedals ............................. kick the rudder pedal push against spin rotation direction

4. Control stick ...................... push forward and hold it there until rotation stops

5. Pedals ............................. immediately after rotation stopping, set the rudder to neutral position

6. Control stick ...................... recover the diving

**CAUTION**

ALTITUDE LOSS PER ONE TURN AND RECOVERING FROM THE SPIN IS 500 UP TO 1000 ft.
3.10 Other emergency procedures

3.10.1 Vibration

If abnormal vibrations occur on the airplane then:

1. Set engine RPM to the mode in which the vibrations are the lowest
2. Land on the nearest possible airport, possibly perform safety landing according to par. 3.8.2. Safety landing.

3.10.2 Carburettor icing

Carburettor icing happens when air temperature drop in the carburettor occurs due to its acceleration in the carburettor and further cooling by evaporating fuel. Carburettor icing mostly happens during descending and approaching for landing (low engine RPM). Carburettor icing shows itself by engine power decreasing and by engine temperature increasing.

Recommended procedure for engine power regeneration is as follows:

1. **CARBURETTOR PREHEATER** (if installed) . . **ON**
2. **THROTTLE** lever .......................... set idle and cruising power again

**NOTE**

Ice coating in the carburettor should be removed by decrease and reincrease of engine power.

3. If the engine power is not successfully increased, then carry out landing at the nearest suitable airport or, if it is not possible, carry out precautionary landing according to par. 3.8.2 Precautionary landing.
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4.1 Introduction

Section 4 describes operations and recommended procedures for normal operation of the airplane. Normal procedures following from system installation and optional equipment, which require supplementation of these instructions, are shown in section 9 – Supplements.

4.2 Recommended speeds for normal procedures

4.2.1 Take-off

Climbing speed up to 50 ft
(flaps in take-off pos. – 15°) .................. 55 KIAS (63 mph IAS)

Best rate-of-climb speed \( V_Y \)
(flaps in take-off pos. – 15°) .................. 55 KIAS (63 mph IAS)

Best rate-of-climb speed \( V_Y \)
(flaps retracted – 0°) .................. 62 KIAS (71 mph IAS)

Best angle-of-climb speed \( V_X \)
(flaps in take-off pos. – 15°) .................. 52 KIAS (60 mph IAS)

Best angle-of-climb speed \( V_X \)
(flaps retracted – 0°) .................. 54 KIAS (62 mph IAS)

4.2.2 Landing

Approaching speed for normal landing
(flaps in landing position – 50°) ............... 48 KIAS (55 mph IAS)

4.3 Assembly and disassembly

Description of assembly and disassembly is given in the SPORTSTAR. Aircraft Maintenance and Inspection Procedures.
4.4 Pre-flight check

Carry out pre-flight check according to the following procedure:

Figure 4-1 Scheme of airplane pre-flight check

WARNING
CHECK BEFORE PRE-FLIGHT CHECK THAT IGNITION IS SWITCHED OFF!

NOTE
The word “condition”, used in procedures of pre-flight check, means visual check of surface, damage, deformation, scratches, attrition, corrosion, icing or other effects decreasing flight safety.

1. Left landing gear leg – check
   - landing gear leg attachment and condition
   - landing gear wheel condition
   - tire condition and inflation
   - condition and attachment of wheel covers, mudguards (if installed)
2. Left wing – check
   - wing surface condition
   - leading edge condition
   - landing light condition – if installed
   - condition of the Pitot tube
   - draining of fuel tank (see chapter 8.5, page 8-6)
   - closing of fuel tank cap

3. Left wing tip – check
   - surface condition
   - attachment check
   - fuel tank vent – cleanness
   - condition and attachment of the position lights and the anticollision beacon – if installed

4. Left aileron – check
   - surface condition
   - attachment
   - free movement

5. Left wing flap – check
   - surface condition
   - attachment

6. Rear part of fuselage – check
   - surface condition
   - condition of antennas (top and bottom fuselage surface) – if installed

7. Tail units – check
   - tail skid condition
   - surface condition
   - condition of rudder and elevator attachment
   - freedom of rudder and elevator movement
   - condition of trim tab, condition of elevator trim tab control

8. Rear part of fuselage – check
   - surface condition

9. Right wing flap – see 5.


11. Right wing tip – see 3.
12. Right wing – see 2. except the landing light (if installed) and Pitot tube

13. Right landing gear leg – see 1.

14. Front part of the fuselage – right hand side – check
   - tilting canopy attachment and condition
   - condition of the nose landing gear leg
   - nose wheel condition
   - condition of the nose wheel control rods

15. Engine

   Checks before the first flight of day – it is necessary to remove upper engine cowling:
   - condition of engine bed
   - condition of engine attachment
   - condition of exhaust system
   - condition of engine cowlings
   - visual check on fuel and electrical system condition
   - check on cooling liquid volume in the expansion tank on the engine body (replenish as required up to max. 2/3 of the expansion tank volume)

   Checks before every flight:
   - cleanness of air intakes
   - check on oil level (between marks – flattenings on the dip stick)
   - check on cooling liquid level in the overflow bottle (level should be between min. and max. mark)
   - proper closing of the upper cowling

16. Propeller – check
   - attachment
   - condition of blades, hub and spinner

17. Front part of fuselage – left hand side – check
   - tilting canopy attachment and condition

18. Cockpit – check

   **NOTE**
   Turn handle clockwise to open cockpit. When keyway is in handle axis, cockpit is locked. Unlock it first with key to keyway perpendicular position to the handle axis.
   - receivers of condensate
   (only before the first flight of day) ........ check on absence of water

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Section 4
Normal Procedures

- all switches ....................... OFF
- instrument equipment ........ check on condition
- check on presence of loose object in the cockpit
- check on adjusting and securing the rudder pedals (see section 7.3.3, page 7-4) – if installed adjustable rudder pedals

[WARNING]

RIGHT AND LEFT PEDAL OF RUDDER CONTROL MUST BE SET TO THE SAME POSITIONS AND WELL SECURED!

- Aircraft Operating Instructions and other required documents ...... check on completeness and validity

4.5 Normal procedures and checklist

4.5.1 Before engine starting

1. Pre-flight check and check on weight and centre of gravity position ...... done
2. Safety harnesses ...................... check, fasten
3. Control stick ......................... free
4. Rudder pedals ....................... free
5. Wing flaps ............................ function check
6. Trim tab ............................... function check
7. PARKING BRAKE handle (if installed) ...... release brakes
8. Brakes ............................... function check
9. AVIONICS SWITCH .................... check OFF
10. Ignition ............................. check OFF
11. Canopy .............................. close
4.5.2 Engine starting

1. **MASTER SWITCH** ...................... ON
2. Fuel gauge indicators .................. check of fuel quantity
3. **FUEL SELECTOR** ..................... LEFT
   Pull the safety button on the fuel selector, turn the handle to the left and then release safety button. Now the handle can be freely moved between left and right position. Safety button prevents unintentionally switch the selector to OFF position.
4. Electric fuel pump (if installed) ......... ON
5. **THROTTLE** lever ..................... idle
6. Choke .................................... as necessary
   (open by pulling up and lock by turning)
7. Space in the propeller area ............. free
8. **BEACON** (if installed) .............. ON (if necessary)
9. Ignition ................................. START (see CAUTION) after starting up BOTH

**CAUTION**
ACTIVATE STARTER FOR 10 SEC. AS A MAXIMUM, THEN LET IT COOL DOWN FOR 2 MINUTES.
AFTER STARTING UP ENGINE, DO NOT CARRY OUT SUDDEN RPM CHANGES, AFTER POWER DECREASE WAIT FOR ABOUT 3 S IN ORDER TO REACH CONSTANT RPM BEFORE REACCELERATION.

10. **THROTTLE** lever ..................... as necessary (see NOTE)
11. Oil pressure ............................ up to 10s min. pressure
12. Electric fuel pump (if installed) ........... OFF

**NOTE**
After starting up engine, adjust throttle for smooth engine running at about 2500 RPM. Check oil pressure. Pressure must increase within 10s. Increase engine RPM until oil pressure is stabilised over 2 bar (29 PSI).
Electric fuel pump operates during engine starting period only. It is not intended for long continuous operation for long time.
14. Engine instruments check

15. Choke as necessary

16. Engine warming up see NOTE

   NOTE
   Begin warming up with engine running at 2000 RPM for about 2 minutes, continue at 2500 RPM. Warming time depends on outside air temperature until oil temperature reaches 50°C (122°F).

17. FUEL SELECTOR RIGHT
   Verify proper engine feeding from the right tank for approx. 1 minute.

18. FUEL SELECTOR LEFT

   NOTE
   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 (and pollute environment) because a fuel return hose is led only into the left tank and returning fuel will overfill the left tank.

19. AVIONICS SWITCH ON

20. Radiostation/avionics ON

21. Other electrical equipment ON as necessary

4.5.3 Before taxiing

1. Transponder (if installed) SBY

2. Outside lights (if installed) as necessary

4.5.4 Taxiing

1. THROTTLE lever as necessary

2. Brakes check by depressing

3. Rudder pedals function check

4. Direction of taxiing control by rudder pedals (these are mechanically connected with nose wheel control), possibly by slacking up left and right wheel of the main landing gear.
Section 4
Normal Procedures

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4.5.5 Before take-off

1. Brakes brake

2. Ignition check carry out, see NOTE

NOTE
Carry out ignition check in the following way:
Set engine speed to 4000 RPM. Switch ignition gradually to L, BOTH, R position and return to BOTH.
RPM drop with one ignition circuit switched off must not exceed 300 RPM. Maximum RPM difference at using one of the L or R circuits is 120 RPM.

3. Engine instruments check

4. Control stick free

5. Wing flaps take-off pos. (15°)

6. Trim NEUTRAL

7. Fuel gauge indicator check on fuel quantity

8. FUEL SELECTOR check LEFT

9. CARBURETTOR PREHEATER (if installed) check function then OFF

NOTE
If CARBURETTOR PREHEATER is switched ON, then engine RPM drop reaches approximately 50 RPM

10. Engine instruments check

11. Flight instruments check

12. Radiostation / avionics check, set

13. Ignition check BOTH

14. Choke close (in inserted position)

15. MASTER SWITCH check ON

16. Safety harnesses tighten up

17. Canopy closed

18. Transponder (if installed) ON or ALT
4.5.6 Take-off

1. **THROTTLE** lever .............................. max. take-off power

2. During take-off run smoothly lighten up the nose landing gear until airplane take-off occurs.

3. Airspeed ................................. 55 KIAS (63 mph IAS)

4. Brakes .............................. brake

5. After reaching 150 ft, set flaps to ........................ retract ed pos. (0°)

6. Trim .............................. as necessary

**WARNING**

TAKE-OFF IS PROHIBITED:
- IF ENGINE RUNNING IS IRREGULAR
- IF CHOKE IS OPEN
- IF VALUES OF ENGINE INSTRUMENTS ARE NOT WITHIN THE REQUIRED RANGE

4.5.7 Climb

1. **THROTTLE** lever .............................. max. continuous power

2. Airspeed ................................. $V_Y = 62$ KIAS ($71$ mph IAS) for the best rate of climb or $V_X = 54$ KIAS ($62$ mph IAS) for the best angle of climb

3. Engine instruments .......................... check

4. Trim .............................. as necessary

4.5.8 Cruise

1. **THROTTLE** lever .............................. as necessary

2. Airspeed ................................. max. 103 KIAS (118 mph IAS)

3. Engine instruments .......................... check

4. Fuel quantity .............................. check

**CAUTION**

FUEL GAUGES DISPLAY TRUE FUEL QUANTITY ONLY ON GROUND AND IN A LEVEL FLIGHT. TO READ TRUE FUEL QUANTITY AFTER TRANSITION FROM CLIMB/DESCENT WAIT APPROX. 2 MINUTES TO FUEL TO LEVEL.
NOTE
It is recommended to alternately switch the tanks during cruise to equally consume fuel from both tanks and minimize airplane tendency to bank with unbalanced tanks.
Do not fly with the fuel selector set to **RIGHT** if the left tank is full to avoid fuel bleed from left tank vent.
When the left tank fuel gauge indicates approx. 1/8 of fuel quantity (needle in the middle between 1/4 and 0) then switch to the right tank to consume remaining fuel and then switch back the left tank to complete the flight at left tank. If the engine conks out due to fuel consumption from either tank, then immediately switch the fuel selector to other tank and engine run will be recovered within 7 seconds.

5. **CARBURETTOR PREHEATER** (if installed) . . as necessary

4.5.9 Descent
1. **THROTTLE** lever ......................... as necessary
2. Airspeed ...................................... as necessary
3. Trim ........................................... as necessary
4. Engine instruments .......................... check
5. **CARBURETTOR PREHEATER** (if installed) . . as necessary

**CAUTION**

AT LONG APPROACHING AND DESCENDING FROM HIGH ALTITUDE IT IS NOT SUITABLE TO REDUCE THROTTLE TO MINIMUM FOR THE REASON OF POSSIBLE ENGINE UNDERCOOLING AND SUBSEQUENT LOSS OF POWER. PERFORM DESCENDING AT INCREASED IDLE AND CHECK OBSERVANCE OF THE ALLOWED VALUES ON ENGINE INSTRUMENTS.

4.5.10 Before landing
1. Fuel quantity ............................... check

**CAUTION**

FUEL GAUGES DISPLAY TRUE FUEL QUANTITY ONLY ON GROUND AND IN A LEVEL FLIGHT. TO READ TRUE FUEL QUANTITY AFTER TRANSITION FROM CLIMB/DESCENT WAIT APPROX. 2 MINUTES TO FUEL TO LEVEL.
2. FUEL SELECTOR ........................................... LEFT
3. Engine instruments ................................. check
4. Brakes .................................................... check by depressing pedals
5. Safety harnesses ................................. tighten up
6. Free area of landing ............................... check

7. CARBURETTOR PREHEATER (if installed) .... ON

8. Approaching speed ................................. 59 KIAS (68 mph IAS)
9. Flaps ..................................................... take-off pos. (15°)
10. Trim ..................................................... as necessary

FINAL
1. Flaps ..................................................... landing pos. (30° or 50°)
2. Maintain airspeed ................................. 48 KIAS (55 mph IAS)
3. Trim ..................................................... as necessary

4. CARBURETTOR PREHEATER (if installed) .. OFF

4.5.11 Balked landing
1. THROTTLE lever ................................. max. take-off power
2. Flaps ..................................................... take-off pos. (15°)
3. Airspeed ................................................... 55 KIAS (63 mph IAS)
4. Flaps in 150 ft ......................................... retracted pos. (0°)
5. Trim ..................................................... as necessary

6. THROTTLE lever ................................. max. continuous power
7. Instruments ............................................. check
8. Climb at airspeed ................................. 62 KIAS (71 mph IAS)

4.5.12 Landing
1. THROTTLE lever ................................. idle
2. Touch-down on main landing gear wheels .. carry out
3. Brakes after nose landing gear wheel touch-down ............................. as necessary
4.5.13 After landing
1. Flaps ........................................... retracted pos. (0°)
2. Trim ........................................... NEUTRAL
3. Outside lights (if installed) .......... OFF
4. Transponder (if installed) .......... OFF

4.5.14 Engine shut—off
1. THROTTLE lever ......................... idle
2. Engine instruments ................. check
3. AVIONICS SWITCH ..................... OFF
4. Radiostation / avionics .......... OFF
5. Other electrical equipment .......... OFF
6. Ignition ...................................... OFF
7. BEACON (if installed) .......... OFF
8. MASTER SWITCH ..................... OFF

4.5.15 Airplane parking
1. Ignition ...................................... check OFF
2. MASTER SWITCH ....................... check OFF
3. FUEL SELECTOR ....................... OFF
   Pull the safety button on the fuel selector, turn the handle to the OFF position and then release safety button. Now the handle is blocked in the OFF position. Safety button prevents unintentionally switch the selector from the OFF position.
4. PARKING BRAKE handle (if installed) ...... brake as necessary
5. Canopy ...................................... close, lock as necessary

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.
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5.1 Introduction

Section 5 provides data for airspeed calibration, stall speeds, take-off performance and nonapproved additional information, provided by the airplane type certificate owner.

The stated performance data has been computed from actual flight tests with the SPORTSTAR airplane and ROTAX 912 ULS engine in good condition and using average piloting techniques.

**CAUTION**

THE PERFORMANCE STATED IN THIS SECTION IS VALID FOR ROTAX 912 ULS (100 HP) TOGETHER WITH WOODCOMP KLASSEK 170/3/R PROPELLER INSTALLED IN THE AIRPLANE, OTHERWISE SEE SECTION 9 – SUPPLEMENTS FOR ACTUAL PERFORMANCE.
5.2 Approved data

5.2.1 Airspeed indicator system calibration

**NOTE**

Assumed zero instrument error.
Valid for airplane take-off weight 1213 lbs (550 kg).

<table>
<thead>
<tr>
<th>KIAS</th>
<th>kts CAS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>flaps 0°</td>
</tr>
<tr>
<td>37</td>
<td>40</td>
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<td>40</td>
<td>42</td>
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<td>mph IAS</td>
<td>mph CAS</td>
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<td>146</td>
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<tr>
<td>160</td>
<td>151</td>
</tr>
<tr>
<td>168</td>
<td>158</td>
</tr>
</tbody>
</table>
5.2.2 Stall speeds

**Conditions:**
- wing level stall – engine at idle power
- turning flight stall – engine at 75% max. continuous power
- airplane weight: 1213 lbs (550 kg)

**NOTE**
The stated stall speeds are valid for all flight altitudes.

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

<table>
<thead>
<tr>
<th>Flaps position</th>
<th>Stall speed</th>
<th>Altitude loss</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KIAS</td>
<td>KCAS</td>
</tr>
<tr>
<td><strong>Wing level flight</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retracted (0°)</td>
<td>42</td>
<td>44</td>
</tr>
<tr>
<td>Take-off (15°)</td>
<td>40</td>
<td>42</td>
</tr>
<tr>
<td>Landing (50°)</td>
<td>37</td>
<td>39</td>
</tr>
<tr>
<td><strong>Turn flight</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(coordinated turn, 30° bank)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retracted (0°)</td>
<td>46</td>
<td>48</td>
</tr>
<tr>
<td>Take-off (15°)</td>
<td>43</td>
<td>45</td>
</tr>
<tr>
<td>Landing (50°)</td>
<td>40</td>
<td>41</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flaps position</th>
<th>Stall speed</th>
<th>Altitude loss</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mph IAS</td>
<td>mph CAS</td>
</tr>
<tr>
<td><strong>Wing level flight</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retracted (0°)</td>
<td>49</td>
<td>51</td>
</tr>
<tr>
<td>Take-off (15°)</td>
<td>46</td>
<td>48</td>
</tr>
<tr>
<td>Landing (50°)</td>
<td>43</td>
<td>45</td>
</tr>
<tr>
<td><strong>Turn flight</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(coordinated turn, 30° bank)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retracted (0°)</td>
<td>53</td>
<td>55</td>
</tr>
<tr>
<td>Take-off (15°)</td>
<td>50</td>
<td>52</td>
</tr>
<tr>
<td>Landing (50°)</td>
<td>46</td>
<td>47</td>
</tr>
</tbody>
</table>
5.2.3 Take-off distance

**Conditions:**
- engine: max. take-off power
- flaps: Take-off (15°)
- carburettor preheating: OFF
- airplane weight: 1213 lbs (550 kg)
- Altitude: 0 ft ISA
- ambient air temperature: ISA

<table>
<thead>
<tr>
<th></th>
<th>Take-off run</th>
<th>Take-off distance to height of 50 ft (15 ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dray concrete</td>
<td>570 ft (174 m)</td>
<td>1310 ft (399 m)</td>
</tr>
<tr>
<td>Grass</td>
<td>660 ft (200 m)</td>
<td>1395 ft (425 m)</td>
</tr>
</tbody>
</table>

**Corrections:**
- Influence of wind: Add 4% on every 1 kt (1.15 mph) of tail wind
- RWY inclination: Add 8% of the take-off run distance on 1% of runway inclination up the slope

5.2.4 Landing distance

**Conditions:**
- engine: idle
- flaps: Landing 50°
- carburettor preheating: OFF
- airplane weight: 1213 lbs (550 kg)
- Altitude: 0 ft ISA
- ambient air temperature: ISA

<table>
<thead>
<tr>
<th></th>
<th>Landing distance from height of 50 ft (15 ft)</th>
<th>Braked landing run</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dray concrete</td>
<td>1185 ft (360 m)</td>
<td>545 ft (165 m)</td>
</tr>
<tr>
<td>Grass</td>
<td>1125 ft (343 m)</td>
<td>485 ft (148 m)</td>
</tr>
</tbody>
</table>

**Corrections:**
- Influence of wind: Add 4.5% on every 1 kt (1.15 mph) of tail wind
- RWY inclination: Add 8% of the landing run distance on 1% of runway inclination down the slope
5.2.5 Climb performance

**Conditions:**
- engine: maximum take-off power
- flaps: retracted (0°)
- carburettor preheating: OFF
- airplane weight: 1213 lbs (550 kg)
- ambient air temperature: ISA
Best rate of climb for various altitudes is mentioned in the following table:

<table>
<thead>
<tr>
<th>Altitude [ft ISA]</th>
<th>Best rate of climb speed</th>
<th>Maximum Rate of climb</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IAS [km/h]</td>
<td>KIAS</td>
</tr>
<tr>
<td>0</td>
<td>114</td>
<td>61</td>
</tr>
<tr>
<td>1000</td>
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<td>61</td>
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<td>2000</td>
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<td>3000</td>
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<td>9000</td>
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<tr>
<td>10000</td>
<td>109</td>
<td>59</td>
</tr>
</tbody>
</table>
5.3 Additional information

5.3.1 Cruise

Conditions:  
- flaps: retracted (0°)  
- carburettor preheating: OFF  
- airplane weight: 1213 lbs (550 kg)  
- ambient air temperature: ISA
5.3.2 Horizontal speeds

In the following table states Indicated airspeeds (IAS) and corresponding True air speeds versus altitude, all for various engine speeds.

<table>
<thead>
<tr>
<th>Engine speed RPM</th>
<th>Cruising Regime</th>
<th>Maximum Continuous Power</th>
<th>Maximum Takeoff Power</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4500</td>
<td>4800</td>
<td>5000</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KIAS</td>
<td>86</td>
<td>94</td>
<td>99</td>
</tr>
<tr>
<td>KTAS</td>
<td>82</td>
<td>89</td>
<td>93</td>
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<tr>
<td>2000</td>
<td></td>
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<tr>
<td>KIAS</td>
<td>82</td>
<td>90</td>
<td>94</td>
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<tr>
<td>KTAS</td>
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<tr>
<td>KIAS</td>
<td>78</td>
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<td>KTAS</td>
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<td>87</td>
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<td>6000</td>
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<tr>
<td>KIAS</td>
<td>74</td>
<td>81</td>
<td>86</td>
</tr>
<tr>
<td>KTAS</td>
<td>78</td>
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<td>8000</td>
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<tr>
<td>KIAS</td>
<td>70</td>
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<tr>
<td>KTAS</td>
<td>77</td>
<td>84</td>
<td>89</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Engine speed RPM</th>
<th>Cruising Regime</th>
<th>Maximum Continuous Power</th>
<th>Maximum Takeoff Power</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4500</td>
<td>4800</td>
<td>5000</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS [mph]</td>
<td>99</td>
<td>108</td>
<td>113</td>
</tr>
<tr>
<td>TAS [mph]</td>
<td>95</td>
<td>102</td>
<td>107</td>
</tr>
<tr>
<td>2000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS [mph]</td>
<td>95</td>
<td>103</td>
<td>109</td>
</tr>
<tr>
<td>TAS [mph]</td>
<td>93</td>
<td>101</td>
<td>106</td>
</tr>
<tr>
<td>4000</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>IAS [mph]</td>
<td>90</td>
<td>98</td>
<td>104</td>
</tr>
<tr>
<td>TAS [mph]</td>
<td>92</td>
<td>100</td>
<td>105</td>
</tr>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>IAS [mph]</td>
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<td>94</td>
<td>99</td>
</tr>
<tr>
<td>TAS [mph]</td>
<td>90</td>
<td>98</td>
<td>103</td>
</tr>
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<td>8000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS [mph]</td>
<td>80</td>
<td>89</td>
<td>94</td>
</tr>
<tr>
<td>TAS [mph]</td>
<td>89</td>
<td>97</td>
<td>102</td>
</tr>
</tbody>
</table>
Section 5
Performance

AIRCRAFT OPERATING INSTRUCTIONS
Doc. No. S2006AOIUS

5.3.3 Endurance

**Conditions:**
- flaps: retracted (0°)
- carburettor preheating: OFF
- airplane weight: 1213 lbs (550 kg)
- ambient air temperature: ISA

Fuel consumption, Range, endurance of SPORTSTAR II with wet wing

<table>
<thead>
<tr>
<th>Fuel Tanks Total Volume</th>
<th>120 l</th>
<th>31.7 USgal</th>
<th>26.4 UKgal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Reserve*</td>
<td>8 l</td>
<td>2.1 USgal</td>
<td>1.8 UKgal</td>
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</tbody>
</table>

*reserve is approx. 1/8 on fuel gauge

<table>
<thead>
<tr>
<th>Altitude 2000 ft ISA</th>
<th>55% MCP</th>
<th>65% MCP</th>
<th>75% MCP</th>
<th>MCP Max, Continuous Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine speed [rpm]</td>
<td>4300</td>
<td>4800</td>
<td>5000</td>
<td>5500</td>
</tr>
<tr>
<td>Fuel consumption [lh]</td>
<td>14.1</td>
<td>18.6</td>
<td>20.5</td>
<td>25.1</td>
</tr>
<tr>
<td></td>
<td>3.7</td>
<td>4.9</td>
<td>5.4</td>
<td>6.6</td>
</tr>
<tr>
<td></td>
<td>3.1</td>
<td>4.1</td>
<td>4.5</td>
<td>5.5</td>
</tr>
<tr>
<td>IAS [km/h]</td>
<td>143</td>
<td>164</td>
<td>172</td>
<td>194</td>
</tr>
<tr>
<td></td>
<td>77</td>
<td>89</td>
<td>98</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>89</td>
<td>102</td>
<td>107</td>
<td>120</td>
</tr>
<tr>
<td>CAS [km/h]</td>
<td>141</td>
<td>160</td>
<td>167</td>
<td>186</td>
</tr>
<tr>
<td></td>
<td>76</td>
<td>86</td>
<td>90</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>88</td>
<td>99</td>
<td>104</td>
<td>116</td>
</tr>
<tr>
<td>TAS [km/h]</td>
<td>145</td>
<td>165</td>
<td>172</td>
<td>192</td>
</tr>
<tr>
<td></td>
<td>78</td>
<td>89</td>
<td>98</td>
<td>103</td>
</tr>
<tr>
<td></td>
<td>90</td>
<td>102</td>
<td>107</td>
<td>119</td>
</tr>
<tr>
<td>Total Endurance (including endurance at reserve) [hour,min]</td>
<td>8,31</td>
<td>6,26</td>
<td>5,51</td>
<td>4,47</td>
</tr>
<tr>
<td>Total Range [km]</td>
<td>1210</td>
<td>1030</td>
<td>950</td>
<td>860</td>
</tr>
<tr>
<td>(including range at reserve) [NM]</td>
<td>653</td>
<td>556</td>
<td>513</td>
<td>464</td>
</tr>
<tr>
<td>(miles)</td>
<td>752</td>
<td>640</td>
<td>590</td>
<td>534</td>
</tr>
<tr>
<td>Endurance at reserve [hour,min]</td>
<td>0,34</td>
<td>0,26</td>
<td>0,23</td>
<td>0,19</td>
</tr>
<tr>
<td>Range at reserve [km]</td>
<td>50</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>[NM]</td>
<td>22</td>
<td>22</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>[miles]</td>
<td>31</td>
<td>22</td>
<td>22</td>
<td>22</td>
</tr>
</tbody>
</table>
5.3.4 Balked landing climb

**Conditions:**
- engine: maximum take-off power
- carburetter preheating: OFF
- flaps: landing position (50°)
- airplane weight: 1213 lbs (550 kg)
- ambient air temperature: ISA
5.3.5 Effect on flight performance and characteristics

Flight performances and characteristics are not considerably affected by rain or insect stuck on the airplane surface.

5.3.6 Demonstrated crosswind performance

Maximum demonstrated speed of wind at airplane operation ...................... 24 kts (28 mph)

Maximum demonstrated speed of cross wind for take-off and landing ................. 10 kts (12 mph)

Maximum demonstrated speed of tail wind ...... 6 kts (7 mph)

Figure 5-1 Influence of wind on take-off and landing
5.3.7 Ceiling
Service ceiling of SPORTSTAR .................. 13 600 ft

5.3.8 Noise data
Not measured.

-- END --
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6. WEIGHT AND BALANCE

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Intentionally left blank
6.1 Introduction

This section includes airplane weighing procedure and a determination of its centre of gravity position, further determining the allowed loading range at which SPORTSTAR airplane can be safely operated.

Procedures for weighing the airplane and the calculation method for establishing the permitted payload range are contained in the Aircraft Maintenance and Inspection Procedures for the SPORTSTAR Light Sport Aircraft.
Intentionally left blank
### 6.2 Weight and balance record

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description of part or modification</th>
<th>Added (+)</th>
<th>Remove (−)</th>
<th>Weight [kg]</th>
<th>Arm [m]</th>
<th>Moment [kg.m]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type: SPORTSTAR</th>
<th>Serial No.:</th>
<th>Date</th>
<th>Weight of empty airplane</th>
<th>Weight</th>
<th>Arm</th>
<th>Moment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Manufactured airplane*

January 15, 2006
## Weight and balance

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Date</th>
<th>Description of part or modification</th>
<th>Added (+)</th>
<th>Remove (-)</th>
<th>Weight [lb]</th>
<th>Arm [in]</th>
<th>Moment [lb.in]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Type: SPORTSTAR

### Serial No.: Manufactured airplane

### Basic weight of empty airplane

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Date</th>
<th>Description of part or modification</th>
<th>Added (+)</th>
<th>Remove (-)</th>
<th>Weight [lb]</th>
<th>Arm [in]</th>
<th>Moment [lb.in]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Weight change

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Date</th>
<th>Description of part or modification</th>
<th>Added (+)</th>
<th>Remove (-)</th>
<th>Weight [lb]</th>
<th>Arm [in]</th>
<th>Moment [lb.in]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Standard data

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Date</th>
<th>Description of part or modification</th>
<th>Added (+)</th>
<th>Remove (-)</th>
<th>Weight [lb]</th>
<th>Arm [in]</th>
<th>Moment [lb.in]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Note

- The table above is a template for recording weight and balance data for the SPORTSTAR aircraft.
- The columns for added (+) and removed (-) allow for tracking changes to the aircraft's weight and balance characteristics.
- The weight data includes the weight of the empty airplane and any modifications or additions.
- The moment values represent the impact of these changes on the aircraft's balance.

### References

- A detailed description of each entry is required to accurately complete the table.
- Ensure to verify the accuracy of the weight and balance values before flight.

### Additional Information

- Warranty and maintenance records must be kept up to date.
- Regular checks are necessary to maintain the aircraft's performance and safety.

---

6–6

January 15, 2006
### 6.3 Permitted payload range

<table>
<thead>
<tr>
<th>Maximum weight of crew [kg]</th>
<th>Fuel tanking</th>
<th>Approved by</th>
<th>Signature</th>
<th>Date</th>
<th>Fuel volume [litres]</th>
<th>Fuel weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 kg</td>
<td>12 kg</td>
<td>0 kg</td>
<td>25 kg</td>
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<td>20 kg</td>
<td>10 kg</td>
<td>0 kg</td>
<td>20 kg</td>
<td>0 kg</td>
<td>20 kg</td>
<td>10 kg</td>
</tr>
<tr>
<td>15 kg</td>
<td>8 kg</td>
<td>0 kg</td>
<td>15 kg</td>
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<td>15 kg</td>
<td>8 kg</td>
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<tr>
<td>10 kg</td>
<td>6 kg</td>
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<td>0 kg</td>
<td>10 kg</td>
<td>6 kg</td>
</tr>
<tr>
<td>5 kg</td>
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<td>0 kg</td>
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<tr>
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<td>2 kg</td>
<td>0 kg</td>
<td>0 kg</td>
<td>0 kg</td>
<td>2 kg</td>
<td>0 kg</td>
</tr>
</tbody>
</table>

**C.G. [% MAC]**

**Empty weight [kg]**

**Date**
## Section 6

### Weight and balance

<table>
<thead>
<tr>
<th>Maximum weight of crew [lbs]</th>
<th>Fuel tanking</th>
<th>Approved by</th>
<th>Date</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel volume [U.S. gallons]</td>
<td>Fuel weight [lbs]</td>
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<td>1</td>
<td>31.7</td>
</tr>
<tr>
<td>C.G. [% MAC]</td>
<td>Empty weight [lbs]</td>
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<td>0.6</td>
<td>26.4</td>
</tr>
<tr>
<td>Date</td>
<td>Weight [lbs]</td>
<td>0.4</td>
<td>0.4</td>
<td>19.8</td>
</tr>
<tr>
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<tr>
<td></td>
<td></td>
<td>0.2</td>
<td>0.2</td>
<td>6.6</td>
</tr>
</tbody>
</table>

B A G G A G E

Januaryy 15, 2006
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7.1 Introduction

This section describes systems of the airplane and its operation. More detailed information on optional systems and equipment are available in section 9, Supplements.

7.2 Airframe

The airframe of SPORTSTAR airplane is of semimonocoque structure consisting of metal reinforcement, frames and duralumin sheet skin.

7.2.1 Fuselage

The fuselage is of semimonocoque structure consisting of reinforcements and duralumin skin. Fuselage section is rectangular in the lower part and elliptic in the upper part. The fin is an integral part of fuselage. The cockpit for two—member crew is located in the middle part of the fuselage that is accessible after uncovering the single—piece organic glass canopy. The engine compartment in the front part of the fuselage is separated from the cockpit by the steel fire wall to which the engine bed is attached.

7.2.2 Wing

The wing is of rectangular shape, single—spar structure with the auxiliary spar with suspended ailerons and split wing flaps. Riveting is used for connecting individual structural elements. Fiber—glass wing tips are riveted on the wing ends.

7.2.3 Horizontal tail unit (HTU)

The VTU of conventional type consists of the stabilizer and elevator with the trim tab. Single—spar structure of HTU consists of duralumin ribs, spar and skin. Top view of HTU is of rectangular shape.

7.2.4 Vertical tail unit (VTU)

VTU is of trapezoidal shape. Its fin is an integral part of the fuselage. The rudder is suspended on the fin by means of two hinges. The VTU structure consists of the duralumin spar and skin.
7.3 Control

Airplane control consists of ailerons, elevator and rudder. Directional control is connected by means of pull rods with nose landing gear control. Main landing gear brakes are controlled by pedals of directional control. Airplane is equipped with dual control enabling flight with two—member crew.

7.3.1 Longitudinal control

Longitudinal control is actuated by the control stick. Longitudinal movement of control stick is transferred to the elevator by mechanical system of pull rods and levers.

7.3.2 Lateral control

Lateral control is actuated by the control stick. From the control stick the movement is transferred through the system of levers and pull rods to ailerons.

7.3.3 Rudder control

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

Foot control pedals adjustable into three positions can be installed as an option.

Way of adjustment of rudder pedals:

1. Release the pin from the adjusting groove
2. Set pedal to one of three possible positions
3. Check on the pin locking—on in the adjusting groove

**WARNING**

RIGHT AND LEFT PEDAL OF RUDDER CONTROL MUST BE ADJUSTED IN THE SAME POSITIONS AND SECURED!

7.3.4 Elevator trim tab control

The elevator trim tab is controlled by the lever located in between the pilot seats. The control lever is interconnected with the trim tab by means of bowdwen—cables.
7.4 Controls in cockpit

Figure 7-1 Cockpit control elements

1 Control stick
2 Instrument panel
3 Carburettor pre-heating knob (if installed)
4 Cockpit heating / canopy defog selector (if installed)
5 Hot air supply knob (if installed)
6 Throttle lever
7 Ignition
8 Choke
9 Master switch
10 Fuel selector
11 Rudder control pedals
12 Emergency parachute system lever (if installed)
13 Flap control lever
14 Trim control lever
15 Headset sockets
7.5 Instrument panel
See section 9 – supplements.

7.6 Inside and outside marking and placards
See Aircraft Maintenance and Inspection Procedures.

7.7 Landing gear and brakes

7.7.1 Landing gear
The airplane is equipped with a sort of fixed nose landing gear. Main landing gear legs are produced from composite spring. Nose landing gear leg is welded from two pieces – the tube and the yoke – in which the nose wheel is mounted. The nose landing gear is spring-loaded by a rubber rope. The nose wheel is steerable, wheel control is coupled with rudder control by means of two pull rods. Wheels can be fitted with fiber-glass aerodynamic pants.

7.7.2 Brakes
The SPORTSTAR airplane is equipped with disk hydraulic brakes on main landing gear wheels. Brake system is composed of brake pedals (these are a part of rudder control pedals), brake pumps, hoses for leading brake liquid, brake yokes with wheel cylinders and brake pads. By depressing the brake pedals compression of brake pumps occurs, which generates pressure in brake circuit and hydraulic cylinders press the brake pads onto the brake disks. Braking pressure can be regulated only by force of brake pedals depressing.

The airplane can be equipped by mechanical manually controlled parking brake. PARKING BRAKE handle is located in between the pilot seats.

7.8 Seat and safety harnesses
SPORTSTAR is a two-seat airplane with side-by-side seats. Seats are fixed, non-adjustable and fitted with light upholstery.

Each of seats is fitted with four-point safety harness which is composed of safety belts, shoulder straps and lock. The safety harness is anchored in the middle of the frame behind the baggage compartment and on the seat sides.

7.9 Baggage compartment
Baggage compartment is positioned behind seat rests.
Maximum weight of baggage is 33 lbs (15 kg) and is stated on the placard in the baggage compartment. The baggage compartment is fitted with rubber straps for baggage fixation.
7.10 Canopy

The cockpit canopy is of a semidrop shape. The framework is composed of metal structure on which the organic glass canopy is fixed by bolts.

The canopy is attached to the fuselage in the front part by two swivel pins by means of which it can be folded up forwards. In order to make opening easier, the actual weight of canopy is balanced by two gas struts, besides the canopy is provided with holders on the lower framework for easier handling. The canopy is provided with the lock in the rear upper part of framework for locking.

7.11 Power unit

7.11.1 General

The engine ROTAX 912 UL (80 hp) is used to power SPORTSTAR airplane as a standard. ROTAX 912 ULS (100 hp) is an option. ROTAX 912 is a four-cylinder, four-stroke engine with opposite cylinders, central cam shaft and OHV valve mechanism.

The on-ground adjustable, composite, 3-blade propeller WOODCOMP KLASSIC 170/3/R. is standardly mounted on the engine ROTAX 912 ULS. Other propeller type can be installed on customer’s request — see sec. 9 for detailed information.

7.11.2 Engine control

Engine power is controlled by means of THROTTLE lever, which is located in the middle of the instrument panel and which controls engine power range from idle up to maximum take-off. Engine power controller is mechanically interconnected with the flap on carburetters.

If the lever is fully pushed in, then this position corresponds to maximum engine power. If the lever is fully pulled out, then this position corresponds to idle. Rapid changes in engine power setting can be made by pressing down the round button on the lever body and by its pulling out or pushing in. Small changes in power setting can be performed through lever turning (counterclockwise — power increase).

The lever is fitted with the locking ring, counterclockwise turning of which ensures locking of the lever in requested position.

7.11.3 Engine instruments

The following analog instruments located on the instrument panel serve for engine performance monitoring. The digital engine monitoring system can be installed in the airplane instead of analog engine instruments.

**RPM indicator**

The electrical RPM indicator is controlled by signal from the generator RPM transmitter. Working range of the RPM indicator is 0 — 7000 RPM. Colour code is stated in section 2, page 2–5.
Cylinder head thermometer

The cylinder head thermometer transmitter senses temperature of cylinder No. 3. Working range of the cylinder head thermometer is 50 °C (120 °F). Colour code is stated in section 2, page 2–5.

Oil thermometer

Oil temperature on engine input is measured by the sensor located behind the oil pump. Working range of oil thermometer is 50 °C. (120 °F). Colour code is stated in section 2, page 2–5.

Oil pressure gauge

Oil pressure on the oil input into engine is measured by means of sensor which is located behind the oil filter. Working range is 0 – 10 bar. (0 – 150 PSI). Colour code is stated in section 2, page 2–5.

7.11.4 Engine cooling system

Engine cooling is combined, cylinder heads are cooled by water, cylinders are cooled by air.

Cooling circuit of cylinder heads is designed as a closed system containing pump, expansion reservoir (1) with pressure closure (3), cooler of cooling liquid (2) and drainage reservoir (4). Scheme of cylinder head cooling system is shown in Fig. 7-2.

When changing, the cooling liquid is filled up through the cap of expansion reservoir (1), during airplane operation it is replenished into drainage reservoir (4) between the lines of maximum and minimum level.

Figure 7-2 Scheme of cylinder head cooling system
7.11.5 Engine lubrication system

Engine lubrication system is performed with the dry crank case. Engine lubrication system is equipped with oil pump (1) ensuring oil feeding from reservoir (4) located on the fire wall through the oil cooler (5) and the oil cleaner (6) to the lubricated points of engine. The pressure sensor (2) is located behind the oil pump. The oil reservoir is aerated by the hose (7) which is led under the airplane. Oil pressure and temperature are indicated on instruments in right side of the instrument panel. Oil is replenished through the lid in the upper part of the oil reservoir.

![Scheme of engine lubrication system](image)

Figure 7-3 Scheme of engine lubrication system

7.11.6 Engine intake system

Engine intake system ensures delivery of sufficient air into engine. Air is taken into the engine through openings on the engine covers through the air filters. The intake system can be equipped with carburettor heating system. Hot air from the heat exchanger (located on the exhaust collector) is taken to the mixing chamber. Amount of taken hot air is regulated by flaps in mixing chamber inlets. Flaps are controlled by the CARBURETTOR PREHEATER knob on the instrument panel.

7.11.7 Ignition system

The engine is equipped with the double contactless ignition system. Each ignition circuit has own source of energy, control unit, 2 ignition coils and 4 spark plugs. It is fully autonomous on the other circuit of accumulator. High voltage current is distributed to the spark plugs through high-voltage cables. Ignition sequence of individual engine cylinders:

Ignition circuits are controlled by the ignition switch on the instrument panel. Positions of ignition switch:

- **OFF**: engine ignition is off
- **R**: only ignition circuit B is on
- **L**: only ignition circuit A is on
- **BOTH**: both circuits are on
- **START**: both circuits are on and starter is cranking the engine
7.12 Fuel system

Fuel system serves for keeping fuel in the airplane and its feeding to the engine. Fuel system of SPORTSTAR airplane is composed of integral fuel tanks, fuel line, fuel selector, fuel filter, mechanical fuel pump — located on the engine (auxiliary electrical fuel pump can be installed), distribution pipe of fuel with, return branch of fuel, fuel gauges and fuel tanks draining valves.

7.12.1 Fuel tanks

Fuel is contained in the wing integral tanks having volume 60 l (15.85 U.S. gallons) each. Each tank is fitted with air venting (output is under the wing tip) and draining valve on the bottom side of the wing. Fuel is led from the tanks through the hoses to the fuel selector located on a central console under the instrument panel and then through a fuel filter to the engine pump and carburetors. Fuel return hose goes from the fuel pump into the left tank, which is due to considered as a “primary” tank. See figure 7–4 for Scheme of fuel system.

7.12.2 Fuel selector

The fuel selector serves for tank selection and fuel delivery interruption in case of engine fire or long parking of airplane.
To move selector from OFF (closed) position it necessary pull the safety button on the fuel selector, turn the handle from the OFF position to the left and then release safety button. Now the handle can be freely moved between LEFT and RIGHT position. Safety button prevents unintentionally switch the selector to OFF position.
To move selector to OFF (closed) position it is necessary pull the safety button on the fuel selector, turn the handle to the OFF position and then release safety button. Now the handle is blocked in the OFF position. Safety button prevents unintentionally switch the selector from the OFF position during parking.
7.12.3 Fuel filter

The fuel filter separates all mechanical impurities from fuel. The fuel filter is located in the cockpit on the left airframe panel.

7.12.4 Indication of fuel quantity

Fuel quantity is measured by a float fuel gauge transmitter in each tank and indicated on fuel gauge on the instrument panel. LH fuel gauges indicates fuel quantity in the left (primary) tank, RH indicator in the right tank. True fuel quantity is indicated only on ground and in level flight and it takes approx. 2 minutes to level fuel after transition from climb/descent.

7.12.5 Fuel tank draining

Draining of the fuel tank is specified in chapter 8.5 in page 8–7.
Figure 7-4 Scheme of fuel system
7.13 Electrical system

The airplane is equipped with 14 V DC electrical installation. A generator with power of 250 W is the primary source of electrical energy. The secondary source of energy is the accumulator 12V/16Ah that is located in the engine compartment on the fire wall. It is used for engine starting and in case of generator failure as an emergency source of energy and also serves as the smoothing filter of power system.

DC voltage is distributed to individual systems by main busbar. Each system is protected by circuit breaker. If overloading of any of the circuits occurs, then the circuit breaker is pulled out. Circuit breakers are listed in the Aircraft Maintenance and Inspection Procedures.

After switching **MASTER SWITCH** on and by turning the ignition key to **START** position the starter is activated. The starter is power supplied from the accumulator before engine start. After engine has been started and idle RPM reached, generator starts supplying current into electrical network.

7.13.1 Lighting

Airplane can be equipped with an external lighting.

External lighting can be composed of position lights and anticollision beacons which are located in wing tip and landing headlight which is located in left wing leading edge or in the lower engine cowling. Position lights are switched by **POS. LIGHTS** switch and anticollision beacon by **BEACON** switch. Landing headlight is switched by **LDG LIGHT** (or **REFLECTOR**) switch.

7.13.2 Electrical system scheme

See Aircraft Maintenance and Inspection Procedures.
7.14 Pitot—static system

Pitot—static tube for sensing static and total pressure is located under the left half of the wing. Total pressure is sensed through the opening in the Pitot—static tube face. Static pressure is sensed through openings on the tube circumference. System of pressure distribution to individual instruments are made by means of flexible plastic hoses. Transparent draining reservoirs are located in the pressure branch of static and total pressure on the left fuselage side by the wing leading edge.

Static pressure is led to altimeter, airspeed indicator, variometer and altitude encoder (if installed). Total pressure is led only to the airspeed indicator.

Figure 7-5 Scheme of pitot—static system
7.15 Supplementary equipment

7.15.1 Ventilation and heating system

Cockpit ventilation is ensured by two sliding windows located on the tilting canopy. Cockpit heating is ensured by hot air from the heat exchanger. The heat exchanger is located on the exhaust pipe collector. Air from outside atmosphere is warmed up in the exhaust pipe collector and delivered through air hoses into the cockpit. Hot air quantity is regulated by the flap which is controlled by the HOT AIR knob on the instrument panel. The cockpit heating system can be equipped with a windshield blowing system.

7.16 Navigation and communication equipment

Description of operation of navigation and communication equipment see section 9 – Supplements.
CONTENTS

8. AIRPLANE HANDLING, SERVICING AND MAINTENANCE

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8.1 Introduction

This section includes the procedures for airplane handling, maintenance and operation recommended by the manufacturer.

It is necessary to follow the set-down lubrication plan, scope and periodicity of preventive maintenance depending on climatic and flight conditions according to the Aircraft Maintenance and Inspection Procedures of SPORTSTAR Light Sport Aircraft.

Airplane owner should be in a permanent touch with the manufacturer, either directly or through the network of business representatives, which enables him to get the newest information concerning airplane operation, handling and maintenance. The manufacturer distributes this information to users through Service bulletins (Mandatory bulletins), Information bulletins (letters) and further instructions.

Mandatory bulletins are especially important for keeping up airworthiness and the manufacturer considers them mandatory although they do not come into effect before Airworthiness Directive is issued by aviation authority of user’s country.

All correspondence with the airplane manufacturer, distributor or service center must contain the airplane serial number. The airplane serial number is shown on the title sheet of this Instructions and on the production plate behind the rest of pilot seats.

The manufacturer delivers along with aircraft SPORTSTAR the” Aircraft Operating Instructions (AOI)” and the “ Aircraft Maintenance and Inspection Procedures (AMIP)”.

Qualification requirements to perform maintenance and repairs are mentioned in the AMIP — item 4.1.1.

Owner/Operator Responsibilities:

– Each owner/operator of an LSA airplane shall read and comply with the maintenance and continued airworthiness information and instructions provided by the manufacturer.

– Each owner/operator of an LSA airplane shall be responsible for providing the manufacturer with current contact information where the manufacturer may send the owner/operator supplemental notification bulletins.

– The owner/operator of an LSA airplane shall be responsible for notifying the manufacturer of any safety of flight issue or significant service difficulty upon discovery.

– The owner/operator of an LSA airplane shall be responsible for complying with all manufacturer issued notices of corrective action and for complying with all
applicable aviation authority regulations in regard to maintaining the airworthiness of the LSA airplane.

- An owner of an LSA airplane shall ensure that any needed corrective action must be completed as specified in a notice, or by the next scheduled annual inspection.

- Should an owner/operator not comply with any mandatory service requirement, the LSA airplane shall be considered not in compliance with applicable ASTM Standards and may be subject to regulatory action by the presiding aviation authority.

8.2 Airplane inspection period

Periodical inspections and reviews of airplane must be carried out at the latest in the following intervals:

- after first 25 ± 2 hours of operation
- after every 50 ± 3 hours of operation
- after every 100 ± 5 hours of operation
- annual inspection

Details on periodical inspections are provided in the Aircraft Maintenance and Inspection Procedures of SPORTSTAR.

Refer to the Rotax 912 Operator’s Manual for engine maintenance.
Refer to the Propeller Maintenance Manual for propeller maintenance.
8.3 Modifications or airplane repairs

All airplane repairs and modifications of airplane must be carried out by qualified personnel in an approved service center (see AMIP – item 4.1.1.).

Before any repairs/modification is made to the aircraft, consult the Civil aviation authority of the country in which the airplane is registered to assess effect of the repair/modification on the airworthiness.

Basic repairs of airplane are described in the Aircraft Maintenance and Inspection Procedures of SPORTSTAR.

8.4 Road transport

8.4.1 Airplane towing

It is possible to move the airplane on a short distance by holding the fuselage end in the position before the fin, eventually by holding the root part of wings.

The hand towing bar can be used for airplane relocation which will be fastened to the nose wheel axis.

To turn the airplane on the spot, push on the fuselage end part in the area before the fin, lift the nose wheel and turn the airplane in required direction.

**WARNING**

SWITCH OFF IGNITION BEFORE GROUND HANDLING WITH THE AIRPLANE!

**CAUTION**

AVOID EXCESSIVE PRESSURES ON THE AIRFRAME STRUCTURE, ESPECIALLY ON THE WING TIPS, HTU, VTU ETC.

WHEN HANDLING THE AIRPLANE BY MEANS OF THE TOWING BAR, PROPELLER BLADES MUST BE SET TO HORIZONTAL POSITION. MAXIMUM DEFLECTION OF THE NOSE WHEEL IS ± 10°.

AT MANUAL ENGINE STARTING GRASP THE PROPELLER BLADE AREA, I.E. NOT ONLY PROPELLER EDGE.
8.4.2 Airplane parking

It is the most suitable solution to place the airplane into a hangar possibly into another covered room with stable temperature, good venting, low humidity and dust-free environment. In case of parking out of the hangar it is necessary to anchor the airplane and at long-term parking to cover the canopy, possibly the whole airplane with suitable tarpaulins.

8.4.3 Airplane anchoring

The airplane is anchored at parking out of hangar after termination of flight day or according to need. Anchoring of the airplane is necessary for its protection against possible damage, caused by wings and gusts. For this purpose the airplane is equipped with fixing eyes on the lower side of wings.

Procedure:

1. Check of fuel selector, off—position of all switches, ignition and master switch.
2. Lock manual control, e.g. by using safety belts
3. Close vent windows
4. Close and lock the cockpit canopy
5. Anchor the airplane to the ground by means of cables pulled through fixing eyes which are located on the lower side of wings. Further it is necessary to anchor the nose landing gear.

**NOTE**

In case that long—term airplane anchoring is supposed, namely in winter period, it is suitable to cover the canopy, eventually the whole airplane by appropriate tarpaulins which must be properly secured to the airplane structure.
8.4.4 Airplane jacking

Airplane jacking presents no big difficulties due to relatively low airplane empty weight and can be performed by two persons.

First, it is necessary to prepare two suitable rests which will support the airplane.

The airplane can be jacked in the following way:

- by pushing from the above to the fuselage rear part in the position before the fin the front part of fuselage can be jacked and subsequently supported under the fire wall.
- Rear part of fuselage can be slightly jacked only by grasping in the position near the auxiliary skid and by pushing from below and then the lower part of fuselage can be supported by the rest located in the area of the skid.
- Wings can be jacked by pushing on the wing from below in the area of the main spar. It is necessary to avoid jacking by grasping the wing tip.

8.4.5 Levelling

Levelling procedure is described in the Maintenance manual for SPORTSTAR airplane.

8.4.6 Road transport

The airplane can be transported on communication after its laoding on an appropriate trail. It is necessary to dismount wings. The airplane must be secured against possible movement. This way you will preclude possible damage to the airplane.

8.5 Draining of fuel tank

Draining should be done prior to first flight each day.

There is a drain valve of each wing tank located on its bottom.

Procedure:

1. Put a transparent cup under the drain valve.
2. Using screwdriver (or appropriate jig) press and turn drain valve counterclockwise to open it.
3. Drain required quantity of fuel.

**NOTE**

Draining serves to elimination of impurities and deposits from the fuel. Drain until clean fuel flows from the drain valve.

4. Using screwdriver (or appropriate jig) turn drain valve clockwise to close it.
5. Repeat procedure for the opposite tank.
8.6 Cleaning and care

Always use appropriate cleaning agents when cleaning airplane surface. Residuum of oil and fat can be removed from the airplane surface (excluding the canopy) by suitable detergents, possibly by petrol.

The canopy only to be cleaned by washing with ample stream of tepid water with addition of appropriate detergents. Use soft rag, sponge or wash leather. Use suitable polishing agent after wiping rests of water.

**CAUTION**

NEVER DRY–CLEAN THE CANOPY AND NEVER USE PETROL NOR CHEMICAL SOLVENTS!

Coating, upholstery and carpets in the cockpit can be removed from the cockpit, brushed and, if need be, cleaned with warm water with addition of appropriate detergent. Dry up upholstery after doing this.
9. Supplements

9.1 Introduction

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

9.2 List of inserted supplements

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