STEMME S 10
POWERED SAILPLANE FLIGHT MANUAL
-BRAZILIAN EDITION-

Document No.: A40-10-013
Date of Issue: April 01, 1996

This powered sailplane Flight Manual is approved by the Luftfahrt-Bundesamt (LBA), Federal Republic of Germany, on behalf of the Centro Técnico Aeroespacial for Brazilian registered aircraft, in accordance with the "Regulamentos Brasileiros de Homologação Aeronáutica" (RBHA) Part 21, Section 21.29.

Pages identified "LBA approved" are printed on yellow or red paper, respectively, red colour indicating the emergency procedures. Revisions to the approved portions must be endorsed by the LBA in the Record of Amendments, page 3.

(Name of LBA Representative)

(Stamp / Signature)

22. April 1996
(Date of approval)

Model: STEMME S 10
Type Certification Data Sheet: LBA No. 846
Serial number: 10-
Registration:

This powered sailplane shall be operated in accordance with limitations and instructions established in this manual. Non-standard equipment or systems with effect to the contents of this manual, if installed, are entered in the table on page 2.
Deviations from the Basic Flight Manual for the Type:

The aircraft specified below is fitted, in accordance with the entries in the list, with equipment or systems installed as an alternative to the equipment of the standard version. Resulting additional text has been included in the Flight Manual under the specified revision numbers; the text passages relating to the standard version have been crossed out. The required modifications to the text are described in further detail in the associated LBA approved Service Bulletins.

The procedure of amending the Manual in the case of installation of alternative equipment is described in Section 9.2.

The licensed inspector certifies by his signature that this Flight Manual complies with the data specified in the following and with the associated aircraft.

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0.1 Record of Amendments

Any revision of the present manual must be recorded in the following table. Exempted are:

- Updated weighing data (page 39),
- Data relating to the installation of alternative equipment (page 1)
- Data relating to the installation of supplemental or additional equipment (page 51)
- Deletion of inapplicable text passages pursuant to the Service Bulletin A31-10-008.

The list of amendments on this page and the list of effective pages on the next page are assigned to the serial number. The indicated revision no. in the headline of these pages does not change with the entries in the lists.

Revisions of approved sections must be endorsed by the Luftfahrt-Bundesamt, FRG. Information as to which amendments must be included in the present Manual can be seen from the current Record of Airworthiness Directives and Service Bulletins (see Maintenance Manual, Annex B, doc. no. A08-10-000).

The new or amended text will be marked on the revised page by a black vertical line on the right hand margin; and the Amendment Number and the date will be shown on the right hand side in the headline of the page. In text passages concerned by the installation of alternative equipment, the text for both versions is included in [ ]; the text not applicable to the serial number concerned must be crossed out. For further information please refer to Section 9.2.

The inspector certifies by his signature at the same time the correct transfer of the information specific to the serial number (deletion of inapplicable text passages).

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* These pages may only be incorporated with the quoted amendment number if the alternative equipment item requiring the amendment is installed in the individual aircraft - please check the entries on page 1 for the corresponding SB - mandatory for U.S. import.
0.2 List of Effective Pages

This record is valid only for the Serial No. specified on the title page.

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Section 1 - General

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1.1 Introduction

This flight manual was compiled to give pilots and instructors all necessary information for a safe, appropriate and performance-optimized operation of the motor glider.

The manual includes all the data required to be furnished to the pilot by JAR-22. It further contains a number of other data and operating hints which may be useful to the pilot from the manufacturer's point of view.

For the conversion of technical data the following factors have been used:

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<tr>
<th>1 lb.</th>
<th>0.4536 kg</th>
<th>1 ftlb</th>
<th>0.1356 Nm</th>
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<tbody>
<tr>
<td>1 dr.</td>
<td>1.772 g</td>
<td>1 hp</td>
<td>0.7457 kW</td>
</tr>
<tr>
<td>1 lbf</td>
<td>=1 lb.(wt)</td>
<td>4.45 N</td>
<td></td>
</tr>
<tr>
<td>1 in.</td>
<td>25.4 mm</td>
<td>1 mph</td>
<td>1.609 km/h</td>
</tr>
<tr>
<td>1 ft.</td>
<td>0.3048 m</td>
<td>1 U.S.gal.</td>
<td>3.785 l</td>
</tr>
<tr>
<td>1 sqft.</td>
<td>0.0929 m²</td>
<td>1 p.s.i.</td>
<td>0.06895 bar</td>
</tr>
<tr>
<td>100 fpm</td>
<td>0.5081 m/s</td>
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1.2 Certification Basis

This powered sailplane with the works reference STEMME S 10 has originally been approved by the Luftfahrt-Bundesamt in accordance with Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes JAR-22, effective through change 3, including Amendment 22/84/1, effective October 22, 1984.

The Type Certificate No. 846 has been issued on December 31, 1990.

Category of Airworthiness: "Utility".


The U.S. Type Certificate No. G 58 EU has been issued on July 8, 1992.

1.3 Warnings, Cautions and Notes

Remarks in the manual of particular importance to flight safety and handling have been specially marked by use of one of the following terms:

"Warning" means that the non-observation of the corresponding procedure leads to an immediate or important degradation of the flight safety.

"Caution" means that the non-observation of the corresponding procedure leads to a minor or to a more or less long-term degradation of the flight safety.

"Note" draws attention on any special item not directly related to safety but which is important or unusual.
1.4 Description and Technical Data

The STEMME S10 is a two-seat high performance motor glider with an innovative propulsion concept and highly finished aerodynamic shape. The seats are arranged side-by-side (forward of the wing) and are equipped with dual controls.

The wing is mounted to the fuselage in the upper third. It consists of an inner wing with flaps and Schempp-Hirth air brakes and two outer wings with continuous ailerons.

The tailplane is designed as a "T"-type.

The two-wheel main landing gear can be retracted electrically and contains hydraulic brakes.

The engine is mounted in the fuselage in a central steel tubing frame near the aircraft's Center of Gravity. Engine power is transmitted via a prop shaft made of composites and a reduction gearbox to the jointed propeller in the fuselage nose. The propeller is folded in during soaring flight and covered by the movable nose cone (propeller cone).

One fuel tank is placed in each of the two outer sections of the inner wing.

Technical data:

- wingspan: 75.5 ft (23.00 meters)
- length of fuselage: 27.6 ft (8.42 m)
- height: 5.74 ft (1.75 m)
- aspect ratio: 28.22
- wing area: 201.64 sqft. (18.74 m²)
- max. weight: 1874 lb. (850 kg)
- max. wing loading: 9.29 lb./sqft. (45.36 kg/m²)
- airfoil: HQ 41/14.35 (laminar profile)
- mean aerodynamic wing chord: 2.86 ft (0.873 m)
- engine: Limbach L2400 EB1.AD
- propeller: STEMME 10AP-N
- gear box ratio: i = 1.18
1.5 3-View Plan
Section 2 - Limitations

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2.1 Introduction

This section includes operating limitations, instrument markings and the information signs which are necessary for the safe operation of the motorglider, its engine, standard systems and standard equipment.

The operating limitations included in this section and in section 9 have been approved by the LBA.
2.2 Airspeed

The airspeed limitations and their importance for the use of the aircraft are shown as follows:

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<thead>
<tr>
<th>Speed</th>
<th>Remarks</th>
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</thead>
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<tr>
<td>(V_{NE})</td>
<td>Never exceed speed (maximum permissible airspeed in calm weather)</td>
</tr>
<tr>
<td>(V_{RA})</td>
<td>Maximum airspeed in rough air</td>
</tr>
<tr>
<td>(V_{A})</td>
<td>Calculated maneuvering speed</td>
</tr>
<tr>
<td>(V_{FE})</td>
<td>Permissible maximum airspeed for operation of flaps</td>
</tr>
<tr>
<td>(V_{LO})</td>
<td>Permissible maximum airspeed for the operation of the landing gear</td>
</tr>
</tbody>
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<tr>
<th>Speed</th>
<th>IAS</th>
<th>Remarks</th>
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<tr>
<td>(V_{NE})</td>
<td>270 km/h</td>
<td>This speed must not be exceeded and the control movement must be not more than (\frac{1}{3})rd.</td>
</tr>
<tr>
<td>(V_{RA})</td>
<td>180 km/h</td>
<td>Do not exceed this speed except in smooth air and then only with caution. Examples of rough air are lee-wave rotors, thunderclouds etc.</td>
</tr>
<tr>
<td>(V_{A})</td>
<td>180 km/h</td>
<td>Above this limit the controls must not be moved fully or abruptly because the motorglider structure could be over-stressed under certain conditions.</td>
</tr>
<tr>
<td>(V_{FE})</td>
<td>180 km/h</td>
<td>These airspeeds may not be exceeded in the flap position indicated.</td>
</tr>
<tr>
<td>(V_{LO})</td>
<td>140 km/h</td>
<td>At airspeeds in excess of this airspeed the landing gear may not be lowered or raised.</td>
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2.3 Airspeed Indicator Markings

The following table gives the airspeed indicator markings and the meaning of the colors (AUW = all-up weight).

<table>
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<th>Marking</th>
<th>(IAS) Value or Range</th>
<th>Meaning</th>
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<td>White arc</td>
<td>85-180 km/h</td>
<td>Positive flap operation range. (Lower limit is (1.1 V_{S0}) in landing configuration with maximum AUW. Upper limit is the maximum airspeed with positive flap position.)</td>
</tr>
<tr>
<td>Green arc</td>
<td>90-180 km/h</td>
<td>Normal operating range. (Lower limit is speed (1.1V_{S1}) at max. AUW and most forward C.G. position with flaps neutral; upper limit is rough air speed.</td>
</tr>
<tr>
<td>Yellow arc</td>
<td>180-270 km/h</td>
<td>Maneuvers must be conducted with caution and only in smooth air.</td>
</tr>
<tr>
<td>L</td>
<td>140 km/h</td>
<td>Max. permissible airspeed with flaps in landing position and for landing gear operation</td>
</tr>
<tr>
<td>Red line</td>
<td>270 km/h</td>
<td>Max. airspeed for all operations.</td>
</tr>
<tr>
<td>Blue line</td>
<td>115 km/h</td>
<td>Best rate of climb speed (V_{Y}).</td>
</tr>
<tr>
<td>Yellow triangle</td>
<td>110 km/h</td>
<td>Approach speed at max. AUW.</td>
</tr>
</tbody>
</table>
2.4 Power-Plant

engine manufacturer: LIMBACH
engine: L 2400 EB1.AD
take off power: 92.5 hp / 69 kW
max. permissible take-off RPM 5 min: 3400 rpm
max. permissible permanent RPM: 3000 rpm
max. permissible cylinder head temp.: 482 deg. F / 250 deg. C
max. permissible oil temp.: 248 deg. F / 120 deg. C
oil pressure, minimum: 14.5 p.s.i. / 1 bar
max. permissible press.: 101.5 p.s.i. / 7 bar
lubricants and all other engine related data: refer to Operating and Maintenance Manual LIMBACH L2400 and series.

propeller manufacturer: STEMME
propeller type: 10AP-N

2.5 Power-Plant Instrument Markings

The following table shows the markings of the engine instruments and the meaning of the colors used.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Red Line Minimum Limit</th>
<th>Green Arc Normal Operating</th>
<th>Yellow Arc Caution Range</th>
<th>Red Line Maximum Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tachometer 1) (rpm)</td>
<td>-</td>
<td>1200 - 3000</td>
<td>3000 - 3400</td>
<td>3400</td>
</tr>
<tr>
<td>Oil temperature 2) [deg. C]</td>
<td>-</td>
<td>50 - 120</td>
<td>...50</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>[deg. F]</td>
<td>122 - 248</td>
<td>...122</td>
<td>248</td>
</tr>
<tr>
<td>Cyl. head Temp. 2) [Deg. C]</td>
<td>-</td>
<td>150 - 250</td>
<td>...150</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>[Deg. F]</td>
<td>302 - 482</td>
<td>...302</td>
<td>482</td>
</tr>
<tr>
<td>Oil pressure 3) [bar]</td>
<td>1</td>
<td>1 - 7</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>[p.s.i.]</td>
<td>14.5</td>
<td>14.5 - 101.5</td>
<td>101.5</td>
</tr>
</tbody>
</table>

Fuel quantity gauge: "0" at white line = empty
Red point (beyond "full" mark) means: "no electrical connection"

Notes:
1) reading error ± 50rpm
2) display in [°C]
3) display in [bar]
2.6 Masses (Weights)
maximum permissible take-off weight: 1874 lb. / 850 kg
maximum permissible landing weight: 1874 lb. / 850 kg
maximum mass of all non-lifting parts: 1256.5 lb. / 570 kg
maximum mass in luggage compartment: 48.5 lb. / 22 kg

2.7 Center of Gravity
The limits of the in-flight center of gravity are:
• forward limit: 10 in / 254 mm aft of reference plane
• rear limit: 16.5 in / 420 mm aft of reference plane
In this the reference plane is the vertical plane which contains the leading edge of the inner wing at given angle of the longitudinal axis (refer to maintenance manual).

2.8 Approved maneuvers
The motorglider is certificated in the "Utility" category (normal soaring flight).

2.9 Maneuvering Load Factors (Maximum G-loading)
The following maneuvering load factors (g) must not be exceeded:
up to a maneuvering speed of 97 kts / 180 km/h: positive 5.3g; negative 2.65 g.
up to maximum air speed 146 kts / 270 km/h: positive 4.0 g; negative 1.5 g.

2.10 Flight Crew
The crew of the S10 consists of 2 persons; the lowest crew number is one person.
(For solo operations): When operated solo, the left seat is for the pilot in charge.

2.11 Kinds of Operation
• Flights according to VFR by day.
• Flights in IFR and/or icing conditions are not permitted
• Aerobatics and cloud flying are not permitted.
• For VFR-Night Flights a additional equipment is required within the provisions of the national law. Required base for VFR-Night Flights is the accomplishment of the Stemme SB A31-10-072.
Caution: Night flights are limited to the vicinity of active airfields that are approved for night flight operation (range of glide ratio).
2.12 Minimum Equipment List

1 airspeed indicator
1 altimeter
1 stall warning system
1 magnetic direction indicator
1 side slip indicator
1 tachometer
1 engine elapsed time indicator
1 oil pressure indicator
1 oil temperature indicator
2 fuel quantity indicators
1 cylinder head temperature indicator
2 four-element straps
1 parachute or back-cushion (1.97 in / 50 mm compressed) per pilot
1 Canopy breakage tool

2.13 Fuel

total capacity of fuel tanks (±5%): 2 times 11.9 U.S. gal / 45.0 l
as special equipment(±5%): 2 times 15.8 U.S. gal / 60.0 l
unusable fuel quantity 2 times 0.4 U.S. gal / 1.5 l

Permissible octane rating and fuel types:
- AVGAS 100 LL, aviation fuel
- MOGAS (or car fuel super grade, min. 96 OCT. (RON))

The engine manufacturer recommends that at temperatures in excess of 68 deg. F / 20 deg. C. only AVGAS 100LL/60CT. used.

When stowing the aircraft for longer than one month it is recommended to drain the tank if MOGAS has been used. MOGAS or car fuel have varying compositions, and it is not known how this might affect the long term service life of the tanks.

2.14 Other Limitations

The only permitted colour for the aircraft exterior painting is white due to the necessity of protecting the structure from high temperatures caused by sunlight (approved up to 129°F). For coloured warning paintings the areas of the propeller dome and the wing tips or optional installed winglets are to be used.

For the glazing of the canopy the use of material of an accepted type is permitted only. The luminous transmittance value of these materials may not be less then 70 per cent and colours may not be falsified. These characteristics may not be reduced by the use of tinted canopies.

The luggage load must not exceed 22 lb. (10 kg) in each of the compartments at the sides of the cabin and 4.4 lb. (2 kg) in the centre compartment. Single pieces weighing more than 1.1 lb. must be fastened securely and must load the bottom of the luggage compartment on a sufficient area.
2.15 Limitations placards

This section provides a list of all cockpit placards and their locations required or containing information for the safe flight operation of the motorglider.

For further placards please refer to the Maintenance Manual (Document No. MM10US).

Instrument panel near radio (provided for Reg. No.)

  on center console in the back

  on T-grips in the back
  (for Landing Gear Emergency Let Down)

  on center console; in front and behind the throttle and choke lever

  on nose cone operating handle

  on left side of center console

  on left face of panel near Airspeed Indicator

  on right face of panel

  on side wall, left, next to the airbrake lever

  next to the lower baggage compartments on the left and right

  on back wall over baggage compartment in the back

  on the wing flap position indicator (center console)

  on center console

  on center face of panel

  on red T-grip for canopy emergency jettison (on instrument panel, center face)

  on red T-grip for canopy emergency jettison (on instrument panel, left face)

  on covers of canopy operating handles (left and right)
Section 3 - Emergency Procedures

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3.2 Canopy jettison 8
3.3 Bailing out 8
3.4 Stall Recovery 8
3.5 Spin Recovery 8
3.6 Spiral Dive Recovery 8
3.7 Engine failure 8
3.8 Fire 8
3.9 Other Emergencies 8
   Landing Gear Malfunction and Emergency Deployment: 8
   Breakdown of Electrical System: 8
3.1 Introduction
This section provides a checklist and a description of the recommended procedures in emergencies.

3.2 Canopy jettison
- canopy lock: open left and right levers
- pull red emergency canopy release knob (center of instrument console)
- The canopy will be pushed upwards by a gas spring. If necessary push manually
Warning: The rear canopy lock must be locked when canopy is jettisoned! It functions such that the canopy is only lifted at the front and is torn away by wind forces.

3.3 Bailing out
- release central lock of straps after canopy jettison
- bail out sideways, if possible pushing away from underneath wing to avoid collision with tail plane.

3.4 Stall Recovery
- move stick forward
- level the wings with ailerons and rudder

3.5 Spin Recovery
- apply rudder opposite to the turn
- move stick forward until turning stops
- centralize rudder
- pull out of dive
Note:
With a rear C.G. position the spinning is accompanied by pitching movements.

3.6 Spiral Dive Recovery
- stop the rotation by applying aileron and rudder together opposite to the turn
- pull out of dive (observe airspeed)
3.7 Engine failure

- check fuel contents
- when using right hand tank: is electrical fuel pump switched ON and the right hand fuel cock OPEN?
- Operate the switch "Backup Fuel Pumps" on the right face of the instrument panel.
- carburetor icing: has as yet not been observed as cause for loss of engine power.

**Caution:** When re-starting engine in flight: Propeller may turn despite non-running engine because both are separated by the centrifugal clutch. Check the rev-counter for indicated engine revolutions.

3.8 Fire

- during flight: close both fuel cocks. Main switch off. Wide-open throttle to empty fuel lines. Immediately prepare for outlanding. Descend with airbrakes fully deployed.
- on the ground: close both fuel cocks.
- on take-off: close both fuel cocks. Abort take-off.

3.9 Other Emergencies

**Landing Gear Malfunction and Emergency Deployment:**

The landing gear down condition is confirmed by "GREEN" of the landing gear indicators. If this is not the case:

- check fuse (next to switch) and press in if necessary. If this is not successful:
- lower landing gear mechanically. For this purpose two levers are found on the cockpit wall between the pilot's heads.

**Caution:** For an unimpeded emergency lowering the following sequence has to be adhered to strictly!

- Main landing gear lever in “Neutral” position.
- pull lever with no. 1 (right hand in direction of flight) forcefully; wait for locking kick - right landing gear leg is lowered.
- pull lever with no. 2 (left hand in direction of flight) forcefully; wait for locking kick - left landing gear leg is lowered.
- The lowered condition is to be confirmed by observers on the ground.

**Caution:** A retracting of the landing gear is not possible after an emergency deployment.

Repair of defect: see maintenance manual.

Information with regard to cause: During movement of the landing gear the appropriate control light flashes "RED" - one light allocated to each landing gear leg (left and right).

**Breakdown of Electrical System:**

Main switch OFF. Land immediately on the nearest airfield. Reduce the engine power to a minimum. Lower the landing gear by emergency landing gear operation.
Section 4 - Normal Operating Procedures

4.1 Introduction
4.2 Rigging and De-rigging
4.3 Daily Inspection
4.4 Preflight Inspection
4.5 Normal Operating Procedures and Recommended Airspeeds
   4.5.1 Engine Starting, Warming-up and Taxying Procedures
   4.5.2 Take-off and Climb
   4.5.3 Cruising Flight (including inflight engine stop/start procedures)
   4.5.4 Approach
   4.5.5 Landing
   4.5.6 High Altitude Flight
   4.5.7 Flight in Rain
   4.5.8 Aerobatics
4.1 Introduction

This section provides a checklist as well as a description of the normal operating procedures. Normal operating procedures in connection with additional equipment are described in section 9.

4.2 Rigging and De-rigging

- Clean and grease all bolts and bushings as well as the control connections.
- Place fuselage on lowered landing gear. Examine locking of folding struts of the landing gear legs. Put flap lever in position "L".
- Remove side cowlings and the cover between the wings.
- Rest inner wing on the fuselage. Take care not to jam fuel lines and connecting cables.
- Insert wing pins with operating lever (on-board tools) against the stop in the bushings of the inner wing and secure.
- Connect the operating rods for flaps, aileron and air brake on both sides and secure push-wedges of the quick connectors with spring pin through the control pinholes.
- Connect wing tank quick connectors to the fuselage mounted fuel lines. To guarantee good sealing, the connecting elements must be clean.
- Insert plug for the electrical connector of the fuel sender unit into the bushing in the wing root rib; lock bayonet connector.
- Push left wing into the spar pocket of the inner wing leaving 5 cm unengaged.
- Connect aileron push rods and secure the push wedge of the quick connector with a spring pin through the control pinhole. If position lights are fitted, plug in connectors.
- Push outer wing in further and observe the engagement of the wing pin in the bushings of the inner wing. When bolts are snugly fitted to the bushings, insert the main bolt in direction of flight using the rigging tool and push until the safety pin is flush with the opening in the main bolt. Extract the rigging tool. The safety pin, which is sticking out on the upper side of the wing will then insert itself under spring load and fits flush with the upper side of the wing to secure the main bolt of the outer wing.
- Proceed in same manner when rigging right hand outer wing.
The elevator is provided with an automatic connector. It is pushed from the front onto the fuselage centering bolts until the front fitting tongue fits into the receptacle opening. Then unlock the receptacle (rigging tool), push the elevator downwards into the fitting until the spring bolt is freed. The spring bolt must engage. It must not stick out over the outer contours of the fin. Only then the connection is secure. Additionally the proper fitting of the elevator is to be checked by pushing the front upwards.

- Fit cowlings. Following this, engage the bowden cables for the cooling air intakes.
- Fit pitot tube the opening of the nose cone, twisting it slightly.

Grease the opening from time to time with a thin coating of Vaseline (to seal systems from each other).

**Warning:** If the pitot tube is missing, the air speed indicator will show substantially less below 54 kts / 100 km/h (up to 50 %)!
4.3 Daily Inspection

Before commencing flight duties the responsible pilot has to carry out a visual inspection of the S10 in the following order:

Firstly switch off ignition and main switch.

**Engine:**

- remove cowlings
- check oil contents (min: lower mark, max.: upper mark); on flights in excess of 8 hours: at least middle position.
- visual inspection of the engine; foreign objects in cooling air intakes?
- Inspection of all fuel lines of engine and wing connection area for leakage. The check shall be performed with fuel pressure. For the test switch ON Master switch (with Ignition switch OFF, landing gear DOWN), electrical fuel pump (RH fuel tank) ON, Check with fuel cocks LH and RH tanks OPEN and CLOSED.
- fit cowlings
- examine cooling air flap function by operating the propeller dome (forwards and backwards)
- fuel tank vent opening unobstructed (underside of outer wing connection)?
- visual inspection of fuel contents through filler cap
- drain fuel system by pressing both drainers in the landing gear well:
  - remove as much fuel as is necessary to make sure that possible
  - dirt and water has been removed. For this both main cocks must be opened.
- drained fuel is to be collected in a vessel and examined for water and dirt.

**Caution:** For complete drainage of the tanks the aircraft must be kept level for a few hours before and during the drainage.

  Check that drainers close properly again and do not leak. If they leak there is a possibility of dirt in the fuel.

  Draining of fuel increases the danger of fire. Make sure before engine start up that immediate fire risk does not exist.

**Wing connector area:**

- Wing pins secured
- controls connected and safetied ailerons, flaps, air brakes
- controls free of obstructions
- fuel lines and electrics connected
- foreign body inspection

**Propeller / Propeller Cone:**

- visual inspection of central element and prop blades
- prop blades can be moved freely from inner stop to outer stop (beyond normal operating position)
- prop blades free of damage, protecting strip on prop nose in good condition
- extend blades by hand and examine seat of blades.
Landing Gear:
- air pressure (main wheels 45 - 48 p.s.i. / 3.1 - 3.3 bar, tailwheel 38 - 44 p.s.i. / 2.6 - 3.0 bar)
- both landing gear indicators “GREEN”?
- inspect mounting of spindles on folding struts
- examine elements for emergency landing gear release
- examine end switches for foreign objects and dirt
- Brake fluid: Check quantity. Brake fluid reservoir is located in the landing-gear bay, cabin rear wall.

Wing:
- condition, unobstructed movement and play of aileron, flaps and air brakes.
- Safetied outer wings (safety bolt must be flush with wing contours).

Elevator and Rudder:
- Examine rudder for unobstructed movement and examine elevator for proper rigging.
- Front arresting bolt (colored red) must be flush with fin leading edge.

Fuselage:
- Examine for damage.
- Examine pressure sender units at the front on propeller dome and statics on rear fuselage.

Cockpit:
- Canopy emergency release locked (arresting bolt in marked position on central canopy mounting?)
- Clean canopy. Examine for foreign objects.

4.4 Preflight Inspection
- Has daily inspection been carried out?
- Examine oil and fuel contents.

Checks before engine start up:
- rudder pedals and seat back adjusted to pilot size.
- If available, are parachutes properly donned. Shoulder and lap belts secured.
- Canopy locked (left, right and top rear).
- Propeller dome pushed forward and locked.
- Fuel cocks: left and right wing tank “OPEN”
- Fuel contents gauges, fuel tank left and fuel tank right: if a fuel gauge is not connected, the indicator will be on the right red marking.
- control check.
- Altimeter adjusted.
4.5 Normal Operating Procedures and Recommended Airspeeds

4.5.1 Engine Starting, Warming-up and Taxying Procedures

Starting Up

- With cold engine: Choke "ON".
- Throttle in idling position (pulled).
- Propeller area free of persons and obstacles.
- Master switch "ON"
- Engine master switch "ON"
- Electrical fuel pump (right fuel tank) "ON". Pump noise O.K. (clicking with decreasing frequency if fuel cock "OPEN")
- Operate starter with push button until propeller blades are folded out and turn regularly. Only then ignition switch ON".
- As soon as engine fires, release starter switch. If engine has not fired after 10 seconds, repeat operation. **Caution:** Switching on of ignition before folding out of the propeller blades results in unnecessary loading of the propulsion system.
- Adjust engine revolutions to between 1,500 and 2,000 rpm (reduce choke until engine fires smoothly, then choke "OFF").
- Check oil pressure (GREEN arc; minimum 0.07 p.s.i.).

**Warning:** If the lowest required engine oil pressure is not indicated within 10 seconds, stop engine immediately!

- Check extinguishing of alternator charging light.
- If engine does not fire up after operating the starter five times, there is a possibility of too much fuel in the cylinders.

In this case Choke "OFF". Throttle fully forward and operate starter. When propeller folds out, ignition switch "ON" and operate starter until engine fires. Stop this procedure after 15 seconds the latest, wait one minute and repeat start up attempt.

Should this method be without success, remove the sparking plugs to dry out.

**Note:** The construction of the propulsion system does not permit turning over of the engine by hand.

A **warm engine** is to be started without choke and with some throttle.
Warming up and Power Check

- operate wheel brakes and pull elevator back
- check engine fuel pump: electrical fuel pump (right hand tank) "OFF" and right fuel cock "OFF". After 2-3 minutes there should be no drop in engine rpm.
- warm up engine with 1500 - 2000 rpm
- wait for oil temperature to reach 122 deg. F / 50 deg. C
- check revolutions under full throttle (3250 rpm)
- check cylinder head temperatures (switch over) and oil pressure
- electrical fuel pump "ON" and right fuel cock "ON"

Taxying

- observe taxying area
- seating position as well as wing geometry do not allow the crew to observe the outer wing further than the leading edge sweep-back. This blind spot must be considered absolutely during taxying.
- when taxying slowly operate wheel brakes carefully.
- depending on surface conditions and because of the large moment of inertia the function of the tailwheel steering is delayed.
- to avoid damage of the propeller, taxi on surface with lose stones and gravel with low revolution.

4.5.2 Take-off and Climb

Checks before take off

- check engine revolution under full throttle (3250 rpm).
- choke "OFF"
- canopy locked
- trim neutral
- fuel cocks both "OPEN"
- electrical fuel pump "ON"
- check engine control instruments
- flaps pos. + 5 (deg.)
- air brakes locked

Caution: Always check open fuel cocks carefully. When fuel cocks are closed, the engine will run on for about 1 - 3 minutes. Closed fuel cocks may lead to a loss of engine power in the take off phase.

Caution: Because of the special fuel system both fuel tanks must contain a fuel quantity sufficient for take off.

Caution: Before taxiing from taxi-hold position to take off position, pay attention that the parking brake is deactivated (lever is in OFF position respectively parking brake unlocked). The parking brake shall not be used on the runway anymore.

To release the parking brake turn rotary handle to OFF position respectively unlock the brake lever, use brake lever simultaneously if required.
Warning: It is urged with emphasis not to take off during rain or with wet wings! (See also Section 4.5.7)

Take-off and Climb

• Line up aircraft with runway. Operate throttle smoothly and not jerkily. Keep elevator back at this stage. If on rough runways pitch oscillations occur, keep the elevator steady in a neutral position. In general no counter-measures should be made.

• Lift tailwheel at about 40 kts / 75 km/h by slight pushing. Lift off at 46 kts / 85 km/h. Gain airspeed in horizontal flight up to 59-62 kts / 110-115 km/h and transition to climbing flight.

• During climb observe the oil temperature and cylinder head temperature. If the limits are reached (248 deg. F and 482 deg. F / 120 deg. C. and 250 deg. C.) reduce the climb rate and climb on with higher airspeed.

• The best rate of climb \( v_y \) is at 62 kts (71,5 mph / 115 km/h).

• Retract landing gear at a safe height. The landing gear is retracted when both lights are extinguished. During retraction of landing gear both lights flash "RED". Check automatic circuit breaker (on left-hand side of landing gear switch), press button if necessary. Main landing gear lever in position „Retract“.

4.5.3 Cruising Flight (including inflight engine stop/start procedures)

Horizontal and Cruising Flight (powered flight)

• recommended cruising RPM 2.000-3.000 rpm

• at 3.000 rpm the resultant cruising speed is 89 kts/165km/h

• Fuel can continue to be drawn from both fuel tanks or either the left or right hand tank. When fuel is taken from both tanks it is to be noted that the fuel is not drawn evenly. When switching over to the left hand fuel tank the fuel pump should be switched off, because this tank is serviced by the mechanical engine fuel pump. When switching over to the right hand fuel tank, switch on the fuel pump.

Warning: If the electrical fuel pump is not switched on during fuel consumption out of the right hand tank only, the engine will stop immediately.

Change-over of flight conditions (powered or gliding flight)

General:

Because of the special propulsion concept the flight characteristics of the STEMME S10 alter only very minimal when the configuration is changed from powered to gliding flight or vice-versa.

Regardless of the high reliability one should not depend solely on the propulsion system. Principally the aircraft should be flown during gliding flight with the same safety strategy with regard to outlandings as if no propulsion system were available.
Change-over from powered flight to gliding flight

- reduce air speed          app. 48 kts / 90 km/h
- ignition                "OFF"
- engine master switch     "OFF"
- pull propeller brake within 1 minute after ignition "OFF" until propeller stops

**Warning:** Long windmilling of the propeller will overheat and damage the clutch. While windmilling the airspeed should never exceed 75 kts / 140 km/h.

- position propeller: after the automatic folding-in action of the propeller, pull the positioning lever smoothly but not too fast. The propeller is positioned when lever has been pulled to the stop.
- When the positioning lever is pulled too fast the propeller may turn beyond the permissible position. The propeller cone can not then be retracted. In this case repeat positioning operation.
- pull back and lock propeller cone
- switch off unused electrical consumers
- switch avionics to additional battery, if fitted

**Caution:** Particularly on long gliding flights it is important to keep only absolutely necessary electrical consumers. When the main battery is exhausted, the landing gear may not be lowered electrically and an engine re-start is not possible.

Change-over from gliding flight to powered flight

- airspeed                  less than 75 kts / 140 km/h
- open and lock propeller dome
- master switch             "ON"
- engine master switch      "ON"
- with cold engine choke    "ON"
- throttle in idling position (pulled)
- open fuel cock
- when selecting right hand tank, electrical fuel pump "ON"
- operate starter with push button until propeller blades are extended and turn evenly.
- Only then ignition switch  "ON"
- As soon as engine fires, release ignition switch. If engine has not fired after 10 seconds, ignition "OFF" and repeat procedure.

**Caution:** After the engine has fired up, check cylinder head temperatures (max. 482 deg. F. / 250°C) after a time with reference to the power setting. In case the opening of the cooling air ducts fails, there is the danger that the engine will overheat with subsequent failure.
4.5.4 Approach

- The landing approach can be carried out in gliding configuration or with engine idling and both tanks switched on.
- The approach must be set up in such a manner that the runway can be reached without engine power.
- Lower the landing gear on the downwind leg (takes about 30 seconds) and wait for "GREEN" of the check lights. When the airbrakes are deployed, a horn can be heard and all check lights flash red if the landing gear has not been lowered.
- Flap position "L" (+16 deg.)
- Approach speed 59 kts / 110 km/h.

**Warning:** Before landing check parking brake lever to be in OFF position respectively brake lever to be unlocked. A landing with parking brake set results in uncontrollable braking and in worst case in a locking of the wheels.

**Caution:** In turbulent conditions and strong wind approach with flap position +10 deg. or +5 deg. to warrant better effectiveness of the ailerons. Increase approach speed by 10%.

**Warning:** In rain increase approach speed by 10 % ! (see chapter 4.5.7).

4.5.5 Landing

- Control glide angle by means of the airbrakes.
- Do not round out too low (high landing gear). Reduce airspeed in horizontal flight to the minimum flying speed, pull the stick and put down with main landing gear and tail wheel simultaneously.
- Hold stick pulled after ground contact. Leave airbrakes extended. Operate wheel brakes according to situation. Operate rudder with caution.

After reaching the parking position:

- Parking brake SET (turn lever to ON position and operate brake afterwards) respectively LOCK brake lever
- avionics switch OFF
- engine (for cooling down) idle for app. 1 min.
- ignition "OFF"
- electrical fuel pump "OFF"
- engine master switch "OFF"
- master switch "OFF"
- When parking for longer periods on inclined ground use wheel chocks.
4.5.6 High Altitude Flight

Justification of flutter behavior of the type STEMME S 10 has been performed at altitudes of 2000 m MSL (6500 ft) and above. Based on these tests the maximum airspeed $V_{NE}$ has been established as indicated airspeed (IAS) between 0 and 6500 ft MSL with 146 kts (168 mph / 270 km/h; IAS = TAS at 6500 ft MSL).

In order to avoid exceeding of the maximum permissible true airspeed above 6500 ft MSL the maximum permissible indicated airspeed is reduced with increasing altitude. This is due to the installed airspeed indicator system, the reading of which depends on the pitot/static air pressure and thus also on the air density which decreases with increasing altitude. Based on the ICAO-Standard Atmosphere (ISA) reduction - deviating from the ASI marking - is established in the following steps:

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{from 6500 ft / 2.000 m MSL up to} & \text{V}_{NE} \text{ (TAS) = 146 kts (168 mph / 270 km/h) corresponds to} \\
[\text{ft MSL}] & [\text{m MSL}] & [\text{kts (IAS)}] & [\text{mph (IAS)}] & [\text{km/h (IAS)}] \\
\hline
10.000 & 3.000 & 139 & 159 & 257 \\
13.000 & 4.000 & 132 & 151 & 244 \\
16.500 & 5.000 & 125 & 144 & 231 \\
19.500 & 6.000 & 118 & 136 & 219 \\
26.000 & 8.000 & 105 & 121 & 195 \\
33.000 & 10.000 & 93 & 107 & 173 \\
39.500 & 12.000 & 81 & 93 & 150 \\
\hline
\end{array}
\]

The above speed limits are to be kept with special attentiveness, since freedom of flutter for the type STEMME S 10 can be guaranteed only up to these values

4.5.7 Flight in Rain

During flight in rain the stalling speed increases by up to 10%. Accordingly the approach speed for landing has to be increased by up to 10%.

The take-off run can increase by up to 50%. A soft surface of the runway will further increase the take off run. The climb rate can be reduced by up to 50%. For these reasons it is strongly advised not to fly with wet wings and/or during rain.

4.5.8 Aerobatics

Aerobatics are not permitted.
Section 5 - Performance

5.1 Introduction 8

5.2 LBA-accepted Data 8
   5.2.1 Indicating Errors in the ASI System 8
   5.2.2 Stall Speeds 8
   5.2.3 Take-off performance 8

5.3 Additional Information (not LBA-approved) 8
   5.3.1 Performance in Powered Flight 8
   5.3.2 Demonstrated Crosswind Performance 8
   5.3.3 Speed Polar 8
   5.3.4 Noise Data 8
5.1 Introduction

Section 5 provides approved data concerning indicating errors of the ASI system, stalling and take-off run distances, as well as other data and additional information which do not require LBA approval.

The data in the tables were obtained during test flights with the motor glider and engine in good condition based on average pilot ability.

5.2 LBA-accepted Data

5.2.1 Indicating Errors in the ASI System

Calibration curve in gliding configuration.

During powered flight there are only unimportant changes.

\[ V_{\text{IAS}} = \text{Indicated Air Speed} \] (airspeed shown on the installed ASI)

\[ V_{\text{CAS}} = \text{Calibrated Air Speed} \] (airspeed shown on a calibrated system)
5.2.2 Stall Speeds

The stall speeds of the STEMME S10 depend on its present configuration: engine ON/OFF, engine revolutions, flap position, landing gear UP/DOWN, total all-up weight (AUW) - therefore a variety of factors which can be combined.

With flap positions neutral or positive and with 1874 lb. / 850 kg AUW the stall speeds are found in-between the following limits (IAS):

- 42 kts (48 mph / 77 km/h) with flap in position "L"
- landing gear lowered
- .air brakes closed

- 47 kts (54 mph / 87 km/h) with engine idling
- flap position neutral (0)
- landing gear lowered
- air brakes open

Caution: The STEMME S10 is equipped with an acoustic stall warning system which operates only during powered flight. During gliding flight the stall is indicated by aerodynamic characteristics of the aircraft.

Warning: If the electrical voltage falls below 11.5 V, through a battery charging defect, the stall warning will not work correctly. In this case the airspeed must be monitored and the flight terminated immediately.
### 5.2.3 Take-off performance

Take-off run and take-off distance on **dry, flat grass surface**:

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<tr>
<th>Pressure altitude above sea level [ft]</th>
<th>Temperature [°F]</th>
<th>Pressure altitude above sea level [m]</th>
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<th>Take off run [ft]</th>
<th>Take off distance to 50 feet /15 m altitude [ft]</th>
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Take-off run and take-off distance on **hard, dry surface**:

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<th>Pressure altitude above sea level [m]</th>
<th>OAT [°C]</th>
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</table>

**Warning:** It is strongly urged not to take off during rain or with wet wings! See also chapter 4.5.7
5.3 Additional Information (not LBA-approved)

5.3.1 Performance in Powered Flight

- Cruising speed at 3.000 rpm: 89 kts (103 mph / 165 km/h)
- climb rate: 590 fpm (3.0 m/s) at 3400 rpm
- fuel consumption: 4 U.S. gal./h (15 l/h) at 3000 rpm

All data with fixed pitch propeller at sea level and 59 deg. F (15°C)

5.3.2 Demonstrated Crosswind Performance

Taxiing, take-off and landing are possible up to a cross wind component of 16 kts (30 km/h).

5.3.3 Speed Polar
5.3.4 Noise Data

Fly-over noise measurements according to chapter VI of the "Laermenschutzforderungen fuer Luftfahrzeuge (LSL)" (Noise Protection Requirements for Aircraft) dated 1.1.1989, published in the "Bundesanzeiger Jahrgang 41, Nr. 41a dated 28.2.1989" (Federal Gazette, year 41).

Measured noise level: 57.6 dB (A)
Section 6 - Mass and Balance

6.1 Introduction 8
6.2 Mass and Balance Record / permitted payload range 8
6.1 Introduction

This Section contains the payload range within which the aircraft may be safely operated.

Procedures for weighing the motorglider and the calculation method for establishing the permitted payload range and a comprehensive list of all mandatory equipment available for this aircraft are contained in the Maintenance Manual Sect. 6.3 (Doc. No. A40-10-022).

The actual list of the equipment being installed in the individual aircraft which this manual pertains to, during the weighing, and the original weighing record are contained in the same Maintenance Manual, Appendix C (service records).

6.2 Mass and Balance Record / permitted payload range

The following table shows the maximum and minimum payload in the cockpit and the permissible "total payload". The difference between the two values is the permissible fuel mass. As far as the permitted load ranges are not exceeded, no pre-flight c.g. calculation have to be performed.

The data contained in the table are calculated on the basis of the most recent weighing record.

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<tr>
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</table>

1) With pilot weights (including parachute) between 121.5 lb. (55 kg) and the minimum cockpit payload stated above the ballast weight specified by the manufacturer must be fitted on the right hand rudder pedal in the foremost position. Items of 6.6 lb. / 3 kg are available, each compensating a lack of 16.5 lb. (7.5 kg) of cockpit load at the pilot's position.

2) Calculated each time during weighing according to the calculating rule of the maintenance manual. In each case max. pilot mass 396 lb. / 180 kg and not in excess of 242 lb. (110 kg) per seat (including parachute).

3) This is cockpit payload plus mass of fuel. Calculated each time during weighing according to the calculating rule of the maintenance manual.

4) Please enter the value with the correct unit.
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Section 7 - Description of the powered Glider and its Systems and Equipment

7.1 Introduction 8
7.2 Cockpit Controls 8
7.3 Instrumentation 8
7.4 Air-Brakes 8
7.5 Baggage Compartment 8
7.6 Power-Plant 8
7.7 Fuel System 8
7.8 Electrical System 8
7.1 Introduction

This section provides description and operation advice of the motorglider and its systems and equipment. Refer to section 9, Supplements, for details of optional systems and equipment.

7.2 Cockpit Controls

Each seat has a control stick and rudder pedals, and a brake and flap lever on the left hand side.

Canopy lock: One operating lever on left and one on right side of the canopy frame, as well as one at rear top (whose function is the retention of the canopy for the first phase of the emergency canopy release).

Emergency canopy jettison: in addition to the side locking levers there is a pull lever in the control segment of the instrument panel.

The brake for the main landing gear brake is operated with the hand lever fitted to the LH control stick. Separate lever/rotary handle for parking brake valve on the floor panel console in front of the LH control stick respectively lock LH brake lever with a pin to set parking brake. The same system for the RH stick is available as an option.

The tail wheel is steered by the rudder pedals.

Trim, throttle and mixture lever are placed on a console between the seats.

The fuel cocks are fitted next to each other on a console between the seat backs.

The operating elements for the propeller are combined in the lower middle area of the instrument panel:

• lever to open and close the propeller cone
• lever to brake the propeller after switching off engine
• lever to position the propeller

Ventilation:

• Cabin: ventilation nozzle in the lower middle area (foot) of the instrument panel.
• Canopy: knob in the control segment of the instrument panel.

7.3 Instrumentation

The instrument panel is divided into three faces:

• in the left face the flight control instruments are fitted: ASI with indicating range of minimum 27 kts / 50 km/h up to 162 kts / 300 km/h, altimeter, magnetic compass and optional equipment.
• the center face is used for navigational instrumentation and further optional equipment.
• in the right face the instruments for engine monitoring and on-board electrical system are fitted.

7.4 Air-Brakes

Double paddle Schempp-Hirth air brakes on the upper surface of the inner wing.
The over-center-lock for the operating mechanism is found in the fuselage center section.

7.5 Baggage Compartment

• Lower left and lower right baggage compartment behind seat back: load max. 22 lb. / 10 kg each compartment.
• Upper baggage compartment: load max. 4.4 lb. / 2 kg. No hard items and no loose items exceeding a weight of 1.1 lb. / 0.5 kg unless they are secured.

7.6 Power-Plant

The engine is a "Limbach" L 2400 EB1.AD:
4-cylinder opposed, four stroke, single magneto ignition, twin carburetor). Viewed from the engine power take off, the propulsion system consist of:
• centrifugal clutch with overload protection
• highly elastic clutch, splined sliding joint, propeller shaft, flexible coupling
• one-step fivefold high performance vee-belt reduction gearbox
• retractable propeller STEMME 10 AP-N.
1. Retractable propeller
1.61 diameter in operating position. Extending by centrifugal forces, retracting by readjusting springs; the central body is of aluminum, blades are of fiber composite.

2. Gear
Fivefold high-performance V-belt, gear reduction: 1.18; quiet operation, fail-safe.

3. Flexible disk
for compensation of angle errors and angular movements.

4. Drive shaft
Carbon fiber composite, mass: 2 kg, diameter: 65 mm, length: 1.9 m, first critical bending frequency: > 5,200 RPM.

5. Splined sliding joint
for compensation of axial movements.

6. Highly elastic clutch
for damping of torque oscillations and for reducing the torsional proper frequencies.

7. Bivalent centrifugal clutch
with servo effects. It damps starting shocks which could be critical for the extension of the propeller, protects against overload, and allows a decoupled slow down of the retractive propeller after turning off the engine.

8. Engine
4 cylinders, 4 phase flat engine, single magneto ignition, cooled by ram air.

7.7 Fuel System
The fuel system consists of two independent fuel tank systems with one container at each outer area of the inner wing, both have a fuel cock, water separator and filter. These have been constructed and fitted in such a way that fuel delivery and pressure are available for the proper working of the engine in all normal operating conditions. The left hand fuel tank is operated by the mechanical engine fuel pump and the right hand tank by the electrical fuel pump.

Each fuel pump can only supply fuel out of the fuel tank it is connected to. When both systems are in operation, the drawing down of fuel is not evenly balanced.

[One backup fuel pump (electrically driven) is located parallel to each of the two main pumps. They are operated with one common switch labeled "Backup Fuel Pump" located on the right face of the instrument panel. The circuit breaker (10 Amp.) is found directly above the switch.]
Diagram of fuel system

Einkleben: Schema Kraftstoffanlage (Sonderausführung entspr. A31-10-006 - „Fliegende Pumpstation“)
7.8 Electrical System

The electrical system is supplied by a master battery and a generator. The master battery is placed in the cockpit underneath the right hand control covering.

**Master Switch:** Disconnects all power supply from the main bus bar.

If main electric circuit is lost, the avionics are automatically switched over to the back-up battery (if fitted).

**Lesser Ranking Switches**

- Engine master switch / gliding operations: switches the electrical engine equipment (starter, instruments etc.) on master battery and generator "ON" / "OFF". Suggestion: "OFF" during gliding flight, otherwise current drain.
- switch for the electric engine starter
- ignition switch "ON" / "OFF"
- avionics: switches all electrically operated control and navigation equipment "ON" / "OFF".
- during starter operations, the avionics are switched off (or over to the back up battery if fitted).
- Landing gear switch:
  - upper position: RETRACT
  - lower position: LOWER
  - center position: circuit disconnected from electrical system.
- ACL (Anti-Collision Lights) only when engine master switch "ON"
- Position lights, only when engine master switch "ON"

**Back-up battery**

mounting position: left hand foot well

use: preferred supply of avionics during gliding flight. With this, unintentional discharging of the master battery during gliding flight is prevented and the charge is secured for engine re-start.

Switching: by switch-over from master to back-up battery with switch labeled "AVIONICS SUPPLY".

Charging: through generator or externally (max. charge voltage 14.7 V.)

All electrical circuits and consumers are protected with circuit breakers (primary circuits of relays with fuses only).
Section 8 - Handling, Servicing and Maintenance

8.1 Introduction 8
8.2 Inspection Intervals for the Motorglider 8
8.3 Modifications or Repairs to Motor Glider 8
8.4 Handling on Ground / Road Transport 8
8.5 Cleaning and Care 8
8.1 Introduction

In this section the suggested procedures for the proper handling of the aircraft on the ground as well as servicing are described. Additionally, certain inspection and maintenance regulations are shown, which must be adhered to if the motor glider is to operate with regard to performance and reliability as if new. It is suggested to keep to the lubrication plan whilst observing special preventative service operations in view of particular climatic and operating conditions.

8.2 Inspection Intervals for the Motorglider

Engine: see engine maintenance manual.
- shortest interval 50 h
- first inspection after 25 h.

- shortest interval 50 h
- first inspection after 25 h.

8.3 Modifications or Repairs to Motor Glider

See maintenance manual

8.4 Handling on Ground / Road Transport

- tie down: screw in eyelets under inner wing ends and tie down vertically
- pushing backwards: guide on fin and only push on inner wing.
- road transport: see manual for trailer.

8.5 Cleaning and Care

It is suggested not to leave the aircraft outside unnecessarily, since even after a few short weeks the polyester paint can dry out and crack due to the UV radiation.

The surface and other parts require regular servicing. Detailed suggestions are found in the maintenance manual.
Section 9 - Supplements

9.1 Introduction 8
9.2 Alternative Equipment 8
9.3 Supplemental and Additional Equipment, List of inserted Supplements 8
9.1 Introduction

This section contains the appropriate supplements if various optional equipment and systems which are not constituent parts of the standard version are installed in the powered sailplane associated to this Flight Manual. With these supplements, the pilot has available the additional information and instructions required for safe and efficient operation.

The installation of optional equipment is always based on a Service Bulletin. The pertinent supplemental information will be issued in the form of a Flight Manual insert and in the case of a retrofit will be supplied together with the retrofit kit. The insert is to be filed following the cover page of Section 9.3.

For information on amendments or supplements to the Manuals in the case of optional equipment or systems please refer also to the Service Bulletin A31-10-008.

The accomplishment of any SB having an effect on the Flight Manual is to be certified prior to the next flight in the aircraft's log book and in the record of accomplished SBs/ADs by a licensed inspector. This signature also covers a review of the Flight Manual.

9.2 Alternative Equipment

Special attention is to be paid to the case of equipment and systems which are not installed in addition to but as an alternative to the standard version and thus have an influence on the standard text of the Flight Manual (Sections 1 to 8). Here the rule applies that associated instructions and information are added to the corresponding passage of the standard text, with the original text (if any) and the amended text appearing in square brackets each. A superior following the closed bracket is identical with the current revision number, the letter following the superior indicates whether the text passage applies to the standard version (“s”) or to the alternative version (“a”) (example: \([\ldots]^{3a}\)).

All text passages in brackets which do not correspond to the aircraft's design configuration described on page 1 (standard version, if no entries) must be deleted.

If this procedure cannot or shall not be applied (Section 3/Emergency Procedures and amendments to illustrations), the STEMME Company will keep ready “special versions” of the pages concerned, identified with the corresponding SB number. In the case of an overall revision, all versions of a page will be newly edited; the version applicable to the aircraft concerned is to be inserted.
### 9.3 Supplemental and Additional Equipment, List of inserted Supplements

Supplemental and additional equipment have no influence on the contents of Sections 1 through 8 of the Flight Manual. They may, however, require additional instructions, which have been inserted in the present Flight Manual following this page and entered in the list below.


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