

Am. No.	Affected Sections	removed Pages	included Pages	Amendment Date	Date of inclusion	Signature
12	0, 7, 4, 12	Title, 2, 3, 21, 22-1, 22-1, 38, Fig. 6.3.a,	Title, 2-1, 2-2, 3, 21, 22-1, 22-1, 38, Fig. 6.3.a-1, Fig. 6.3.a-2	Nov. 30, 2007		
13	0, 4	2, 3, 21, 22-1, 22-2	2, 3, 21, 22-1, 22-2	Nov. 24, 2008		
14	0, 4	2-2, 3, 21, 22-1, 22-2	2-2, 3, 21, 22-1, 22-2	Feb. 24, 2010		
15	0, 5	2-2, 3, 23-29	2-2, 3, 23-29	June 07, 2011		
16	0, 4	2-2, 3, 21, 22-1, 22-2	2-2, 3, 21, 22-1, 22-2	April 04, 2012		
17	0, 4	2-2, 3, 21, 22-1, 22-2	2-2, 3, 21, 22-1, 22-2	Aug. 13, 2012		
18	0, 4, 5	Title, 2-2, 3, 4, 5, 21, 22-1, 22-2, 23-30	Title, 2-2, 3, 4, 5, 21, 22, 23-30	Oct. 15, 2012		
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**0.2 List of effective pages**

This record is valid only for the Serial No. specified on the title page. Any amendment is contained ex works that is effective for this Maintenance Manual at Aug. 08, 1996 (amendment status 08). Related to alternative equipment, only those amendments is provided for that correspond to the entries on page 1, amendments that are included later must be entered by hand.

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- Drive shaft made of carbon fibre reinforced composite material
- Flexible coupling on transmission gear side: flexible coupling with elastic angular and torsional flexibility. Lateral flexibility is eliminated by means of a centering bearing.
- Transmission unit: one-stage quintuple high performance vee-belt transmission unit with maintenance-free sealed antifriction bearings. The belt pulleys are subjected to a special hard anodizing process. The transmission unit is supported in the foremost fuselage frame by four mounts with non-linear characteristics for vibration absorption.

## 3.4 Landing Gear

### 3.4.1 Main Landing Gear (figure 3.4.1.a)

Left and right landing gear legs each supported by two sleeve bearings in the central fuselage framework, swivel axis in flight direction. Trailing arms hinged with sleeve bearings in the legs. Elastomere spring bars in the rear tube of the leg.

Retraction and extension with one electric spindle drive for each side.

Retraction: one after the other - first the left landing gear leg, then the right one together with the gear door, and then the left gear door.

Extension: first the left gear door, then the right landing gear leg including gear door, and then the left leg.

The Gear-down position is locked by means of over-center locking of the operating arms.

Electric stop switches for "DOWN" position: on the associated operating arm.

Electric stop switches for "UP" position: at the front of the wheel well on the associated side.

Indication of "DOWN" position by one green LED (light emitting diode) each for the left and the right gear leg on the right face of the instrument panel. During extension and re-traction of the landing gear legs, the corresponding LED is blinking red. With the landing gear in the retracted position, the diodes extinguish and the position of the spindle drives is fixed by means of blocking brakes above the spindle drive motors. The brakes are locked by springs and released electrically during operation of the spindle drives.

The wheel well is covered by two landing gear doors; the right-hand door is coupled via a spring element directly to the right gear leg. The left-hand door is closed via a bowden cable which is operated also by the right landing gear during the last part of its track.

Electric landing gear warning: acoustic warning activated by switches on the air brakes control shaft beneath the left stick cover.

The disk brakes on the main L/G wheels are operated hydraulically. The main cylinder for both the left and right wheel is located on the LH control stick, on RH stick optional. The pressure line from the main brake cylinder to the brake callipers of the wheel brake in the center fuselage are designed as metal-shielded brake hoses. The brake fluid reservoir is located in the landing-gear bay, cabin rear wall.

The parking brake valve to set and to release the parking brake is located on the floor panel console in front of the LH control stick. The parking brake valve is operated by a lever respectively rotary handle. The brake action is simultaneously on both main wheels. Maximum brake pressure for the system layout is 115 bar / 1668 psi, maximum allowed system pressure is 200 bar / 2900 psi.

Only for hydromechanical Brake System:

The master cylinder for both the left and right wheel is located in the wheel well at the front wall (pressure line to the wheel cylinders by short metal tube, T-type distributor and metal-shielded brake hoses). The connection to the hand operating lever on the left stick (right stick optional) is made by a bowden cable, adjustable at the master cylinder. The hand lever can be locked in the operated position for use as a parking brake.

### Main Landing Gear Emergency Extension

Mechanical emergency extension system: By operating two pulls, the connection of the electric landing gear spindle drive to the operating arm is successively released via bowden cables. The landing gear legs extend by gravity to the "DOWN" position. The operating arms are pressed into the locked position by means of spring clips. For operation, the proper sequence is to be adhered to: first the right gear leg, then the left gear leg. The right landing gear leg is equipped with a catch strap in order to prevent the legs from getting stuck in case of incorrect operation (i.e. left leg first).

## Tires

The tires are to be replaced at the latest, when the profiles are worn thin. Pay attention to the slip marks rim/tire. Apply Loctite (metal glue) to the attachment screws on the wheel axles.

## Refilling and Ventilation of Hydraulic Brake System (TOST Brake System)

- Refill with brake fluid DOT 4.
- Install transparent flexible hose and drain bottle at the three venting ports of the parking brake valve and at the left and right brake calliper
- Open the venting valve of the parking brake valve.
- Refill brake fluid by plastic injection nozzle to the brake fluid reservoir in landing gear bay (use sealed adapter) until the brake fluid passing through the transparent flexible hose at the parking brake valve is free of bubbles. If required release/remove RH brake lever and slightly swing with upside down attitude.
- Close venting valve at the parking brake valve.
- Open venting valve at the LH brake calliper.
- With continuous refilling of brake fluid to the brake fluid reservoir as required pump the brake fluid through the hydraulic brake system by operation of the RH brake lever until the brake fluid passing through the transparent flexible hose at the venting valve of the LH brake calliper is free of bubbles. If required release/remove LH brake lever and slightly swing in upside down attitude.
- Close venting valve at the LH brake calliper.
- Open venting valve at the RH brake calliper.
- With continuous refilling of brake fluid to the brake fluid reservoir as required pump the brake fluid through the hydraulic brake system by operation of the RH brake lever until the brake fluid passing through the transparent flexible hose at the venting valve of the RH brake calliper is free of bubbles.
- Close venting valve at the RH brake calliper.
- Operate LH and RH brake lever for inspection.  
=> A clear pressure point has to be identifiable during operation! Otherwise repeat ventilation procedure!
- Reinstall brake lever (if applicable).
- Remove transparent flexible hose and check final brake fluid level at brake fluid reservoir.
- Perform functional check of brake system with pre-flight check according Flight Manual, Ch. 4

## Adjustment and Ventilation of the Wheel Brake System (Hydromechanical Brake System):

Normally the wheel brake does not need to be adjusted since it is a self-aligning hydraulic system.

If there is a drop in braking efficiency, the first step is to check the adjustment of the bowden cable leading from the actuating lever on the control stick to the brake master cylinder in the wheel well. If on the master cylinder the gap between the lever and its lock is less than 0.04 in. (1 mm), the adjustment screw on the actuating lever (on the control stick) can be screwed out some turns.

**Caution:** If the width of the gap exceeds .06 in. (1.5 mm), there is a danger of brake jamming which is not evident immediately. It can cause destruction of the brake linings or the brake disks.

If the braking efficiency remains poor, the second step is to bleed the hydraulic system:

- Prior to venting, the brake fluid tank should be filled completely (use brake fluid DOT4).
- Attach a transparent hose ( $D_i = 0.24$  in./6 mm) on the nipple of the vent screw on the wheel brake jaws. The other end of the hose is to be directed into a glass container filled with brake fluid to such a level that the hose end dips into the fluid.
- Actuate the brakes. Then briefly open the vent screw by means of a spanner (width .4 in./10 mm). During this phase, brake fluid and air will escape. Close the vent, when fluid flow stopped, then release the lever. To perform this procedure, 2 persons are needed.

- This procedure is to be repeated until only brake fluid escapes. The procedure is to be performed on both wheels, one after the other. Make sure that the brake fluid level does not fall below the minimum level mark of the fluid tank during the bleeding procedure.

The same procedure is to be applied for replacement of the brake fluid.

### **Replacement of Brake Linings**

The wheel brake jaws are provided with brake linings to the right and to the left side of the brake disc.

For replacement of the brake linings, the brake jaws can be removed after loosening of both 1/4" screws.

**Warning:** Do not actuate the brake now. The pads with the riveted brake lining can now be replaced by new ones.

The linings must be replaced at the latest shortly before the attachment rivets are exposed.

### **Removal and Installation of Landing Gear Legs**

- Loosen all attachments to the frame.
- Remove locking screws in front of the main bearings.
- Push the bearing bolts out to the front and to the rear, respectively.

Installation is carried out in the reverse order.

## 9. Equipment

### 9.1 Minimum Equipment List

Subject	Manufacturer	Type	TC No., Specification No.	Range
Airspeed Indicator	Winter	6FMS4	TS10.210/15	up to 300 km/h/ 180 mph / 160 kts
	Winter	6FMS5	TS10.210/16	
	Winter	7FMS4	TS10.210/19	
	Winter	7FMS5	TS10.210/20	
Altimeter	Winter	4FGH10	TS10.220/46	up to 10,000 m/ 30,000 ft
	Winter	4FGH20	TS10.220/47	
	Winter	4FGH40	TS10.220/48	up to 20,000 ft
	Winter	4HM6	TS10.220/44	up to 6,000 m
	PZL	W-12S	FD-3/75	up to 20,000 ft
Compass	Airpath	C2300	-	-
	PZL	B-13	FD19/77	-
	Ludolph	FK16	10.410/3	-
	Ludolph	FK5	10.410/1	-
	Hamilton	HI400	TSO C7c Type 1	-
	Presesion Aviation Inc.	PAI-700	TSO	-
Stall Warning System	Westerboer	Speed Control	-	-
Revolution Counter	VDO	333.230/009/1	-	up to 4000 min <sup>-1</sup>
Engine hour meter	Winter	FSZM	TS-GW 1510	-
	VDO	331.811/010/2	-	-
Oil pressure meter	VDO	350.271/031/7	-	up to 10 bar
Oil temp. meter	VDO	310.274/082/1	-	up to 150 °C
Fuel contents meter	VDO	301.271/036/1	-	0 ... <sup>4</sup> / <sub>4</sub>
Cylinder head temperature meter	Limbach	170.215/001	-	up to 375 °C
Four-element straps	Gadringer	BaGu 5203 SchuGu 2700	40.070/32 40.071/05	
	Schroth	Automatic Shoulder belt, left Automatic Shoulder belt, right	SL/1-08-C702 (with stop) SR/1-08-C702 (with stop)	
Back-cushion	One per seat, compressed 2 in. (50 mm) thick (if no parachute, minimum 2 in. thick, is used)			

## 9.2 Supplementary Equipment

Depending on operational and environmental conditions, further equipment may be mandatory to supplementary to the minimum compulsory equipment. The supplementary equipment allowed to be installed in the Stemme S10 is listed in the following selection list.

At the moment, certification is only valid for daytime VFR flights. Flights from 30 min before sunrise and up to 30 min after sunset require lighting equipment, consisting of LH and RH navigation lights, tail position light and anti collision light.

VFR-Night flights are possible after accomplishment of the Stemme SB A31-10-072.

Subject	Manufacturer	Type	TC No., Specification No.	Range, Remarks
Lightning system				
ACL / Position Lights	Whelen / STEMME	various (standard, LED)		Contact manufacturer before installation of additional lighting equipment
Stern Light	Hella / STEMME	various		
Landing Light	Hella / STEMME	various		

## 9.3 Additional Equipment and Systems

Different equipment and systems may be installed in the powered glider S10, which are not part of the minimum or supplementary equipment and which normally are not series standard. Basically the cases "Alternative Equipment", "Additional Equipment" and "Optional Systems" have to be distinguished and treated differently. For further information please refer to the Service Bulletin A31-10-008.

### 9.3.1 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 Maintenance Manual. Here the rule applies that associated information is 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 reference number following the closed bracket is identical with the current revision number, the letter following the reference number indicates whether the text passage applies to the standard version ("s") or to the alternative version ("a") (example: [...]<sup>3a</sup>).

**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 crossed out.**

If this procedure cannot be applied (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 issued; the version applicable to the aircraft concerned is to be inserted.

### 9.3.2 Additional Equipment

In addition to the minimum and supplementary equipment, installation of the following devices is allowed. A precondition is that the energy balance remains within certified limits and the certified weight of equipment in the instrument panel is not exceeded. Altogether 11 kg / 24 lbs instruments, including maximum 1 kg / 2.2 lbs of engine instruments, are certified.

Additionally a ground and flight test must be performed, showing electromagnetic compatibility (EMC). Changes of equipment may be performed by qualified personnel only. An inspector must confirm the correct installation by an entry in the a/c-logbook, the EMC-test flight, the keeping of the energy balance and the inclusion of the changes into the equipment list and the weight and balance report. The above-mentioned inspection and operation documents must be added to Annex C of this Maintenance Manual.

Subject	Manufacturer	Type	TC No., Specification No.	Range, Remarks
Compass	Bohli	46-MFK-1		
Mechanical Variometer	various	various		
VHF-COM	various	various		all approved TSO/ETSO equipment with 57 mm / 2 1/4 in standard ring cutout Contact TC holder before installation of any TSO/ETSO equipment with different size/design
Intercom	PS Engineering	PM 1000 II		and mechanical identical, all equipment, which is fix mountable to the instrument panel due to its own chassis or due to a suitable installation frame
	TELEX	Pro Com 4		
	Sigtronics	SPA-400	TSO	
	Flightcom	403-MC		
	Flightcom	ATC-2		
Transponder	various	various		all approved TSO/ETSO equipment with 57 mm / 2 1/4 in standard ring cutout or 159 mm / 6 1/4 in standard rectangle cutout Contact TC holder before installation of any TSO/ETSO equipment with different size/design
Encoder	various	various		all approved TSO/ETSO equipment
Emergency Transmitter (ELT)	various	various		all approved TSO/ETSO equipment
GPS & Moving Map	various	various		all equipment, which is fix mountable to the instrument panel due to its own chassis or due to a suitable installation frame
EFIS	Dynon Avionics	EFIS D-10 System		
	Garmin	G3X System		Contact TC holder before installation



Subject	Manufacturer	Type	TC No., Specification No.	Range, Remarks
Electronic Vario, Soaring Computer	various	various		all equipment, which is fix mountable to the instrument panel due to its own chassis or due to a suitable installation frame
Collision warning system	various	various		all approved TSO/ETSO equipment with 57 mm / 2 ¼ in standard ring cutout Contact TC holder before installation of any TSO/ETSO equipment with different size/design
VHF NAV (VOR)	various	various		all approved TSO/ETSO equipment, which is fix mountable to the instrument panel due to its own chassis or due to a suitable installation frame
Horizon	various	various		Series equipment
Turn and Bank Indicator	various	various		Series equipment
Directional Gyro	R.C.Allen	RCA15AK-2		
Fire Warning System	Stemme			
Voltmeter/Ammeter	Filser	SR001		