

Am. No.	removed Pages	included Pages	Amendment Date	Date of inclusion	Signature
11	iii; iv; 4-1; 4-2; 4-3	iii-1; iii-2; 4-1; 4-2; 4-3	Sep 09. 2003		
12	iii-2; iv; 4-1; 4-2; 4-3;	iii-2; iv; 4-1; 4-2; 4-3;	March 03. 2005		
13	iii-2, iv, v, vi, 3-9, 4-1..4-3, 5-4, 5-6, 7-2, 7-8, 9-1, 9-2, 9-3	iii-2, iv, v, vi, 3-9, 4-1..4-3, 5-4, 5-6, 7-2, 7-8, 9-1, 9-2, 9-3, 9-4, 9-5	May 25. 2005		
14	i, iii-2, iv, 4-1..4-3, 6-6, 7-7.2, 12-23, 12-24	i, iii-2, iv, 4-1..4-3, 6-6, 7-7.2, 12-23, 12-24	Nov 30. 2007		
15	iii-2, iv, 4-1...4-3	iii-2, iv, 4-1...4-3	Nov 24. 2008		
16	iii-2, iv, 4-1...4-3	iii-2, iv, 4-1...4-3			
17	iii-2, iv, 5-1...5-7	iii-2, iv, 5-1...5-7	June 07. 2011		
18	iii-2, iv, 4-1...4-3	iii-2, iv, 4-1...4-3	April 04. 2012		
19	iii-2, iv, 4-1...4-3	iii-2, iv, 4-1...4-3	Aug 13. 2012		
20	iii-2, iv, v, vi, 4-1...4-3, 5-1...5-7	iii-2, iv, v, vi, 4-1, 5-1...5-8	Oct. 15, 2012		
21	iii-2, iv, 3-7, 7-9, 9-1, 9-2, 9-3, 9-4	iii-2, iv, 3-7, 7-9.1, 7-9.2, 9-1, 9-2, 9-3, 9-4	Jan. 10, 2014		

**0.3 List of Effective Pages**

This record is valid for the Serial No. specified on the title page. Changes on the Maintenance Manual are included ex works if dated before production inspection. Amendments concerning alternative equipment is provided only if mentioned on page 1. Following amendments must be added by hand.

Page	am. no.	date
i	14	30.11.2007
ii		-
iii-1	11	09.09.2003
iii-2	21	10.01.2014
iv	21	10.01.2014
v	20	15.10.2012
vi	20	15.10.2012
1-1		-
2-1		-
2-2	7	11.11.1999
3-1		-
3-2	5	22.02.1999
3-3	5	22.02.1999
3-4		-
3-5	7	11.11.1999
3-6	9	14.12.2001
3-7	21	10.01.2014
3-8		-
3-9	13	25.05.2005
3-10	7	11.11.1999
4-1	20	15.10.2012
5-1	20	15.10.2012
5-2	20	15.10.2012
5-3	20	15.10.2012
5-4	20	15.10.2012
5-5	20	15.10.2012
5-6	20	15.10.2012
5-7	20	15.10.2012
5-8	20	15.10.2012
6-1		-
6-2		-
6-3		-
6-4		-
6-5	7	11.11.1999
6-6	14	30.11.2007
7-1	7	11.11.1999
7-2	13	25.05.2005
7-3		-
7-4	7	11.11.1999

Page	am. no.	date
7-5.1	7	11.11.1999
7-5.2	7	11.11.1999
7-6	7	11.11.1999
7-7.1	7	11.11.1999
7-7.2	14	30.11.2007
7-8	13	25.05.2005
7-9.1	21	10.01.2014
7-9.2	21	10.01.2014
7-10		-
7-11	5	22.02.1999
8-1	3	25.10.1995
8-2	3	25.10.1995
8-3		-
8-4	5	22.02.1999
8-5		-
8-6	3	25.10.1995
8-7		-
8-8	5	22.02.1999
8-9		-
9-1	21	10.01.2014
9-2	21	10.01.2014
9-3	21	10.01.2014
9-4	21	10.01.2014
9-5	13	25.05.2005
10-1	1	10.12.1994
11-1	7	11.11.1999
12-1		-
12-2		-
12-3.1	5	22.02.1999
12-3.2	5	22.02.1999
12-4.1	5	22.02.1999
12-4.2	5	22.02.1999
12-5.1	5	22.02.1999
12-5.2	5	22.02.1999
12-6.1	5	22.02.1999
12-6.2	5	22.02.1999
12-7.1	5	22.02.1999
12-7.2	5	22.02.1999
12-8.1	5	22.02.1999

Page	am. no.	date
12-8.2	5	22.02.1999
12-9.1	9	14.12.2001
12-9.2	5	22.02.1999
12-10	7	11.11.1999
12-11		-
12-12		-
12-13.1	7	11.11.1999
12-13.2	7	11.11.1999
12-13.3	7	11.11.1999
12-14		-
12-15		-
12-16		-
12-17		-
12-18		-
12-19		-
12-20		-
12-21		-
12-22		-
12-23	14	30.11.2007
12-24	14	30.11.2007
12-25		-
12-26		-
12-27		-
12-28		-
12-29		-
12-30		-

title page Annex A	7	11.11.1999
title page Annex B		-
title page Annex C	7	11.11.1999

### Identification of the Propeller System and its Sub-Assemblies

Propeller (complete assembly):	10 AP-V / XXXXX / YYYY
Propeller blade:	10 AP-VB / XXXXX - ZZ
X:	Order number of the production batch (corresponds to the manufacturer's number for the complete propeller assembly)
Y:	Month and year of manufacture, four digits.
Z:	Production batch serial number, two digits.

### 3.3.11 Drivetrain System

The drivetrain comprises:

- Clutch on the engine side: a force transmitting clutch operated by direction and speed. In addition, the clutch has integrated positive elements to allow torsional and angular flexibility as well as longitudinal flexibility. Since the clutch transmits the torque by friction, it simultaneously serves as an overload protection.
- Drive shaft is manufactured in 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 centring bearing.
- Transmission unit: one-stage quintuple high performance V-belt transmission unit with maintenance-free sealed bearings. The belt pulleys are subjected to a special hard anodising 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)

Left and right landing gear legs each supported by two sleeve bearings at the front and rear 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: in succession - 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 radius struts. Retraction and extension by means of electric spindle drives, one each side. Electric stop switches for "gear down" position: on the corresponding strut. Electric stop switches for "gear up" position: at the front of the wheel well on the corresponding side.

Indication of "gear 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 retraction of the landing gear legs, the corresponding LED blinks 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 of 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 the right landing gear as well, operated by a bowden cable and a radius strut during the last part of the retraction sequence.

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.

- endurance test: retract and extend the landing gear some times as required (at intervals of 2 minutes) with intermediate checks each time:
  - inspect supports of switches
  - inspect switches (attachment), damage
  - listen to spindle motor noise
  - if necessary, adjust brake bands
  - look out for chafe spots on the brake tubes
  - check for stress-strain loads acting on the wiring.

**Functional Check of Emergency Undercarriage Extension:** (fig. 7.4.1.a)

- support the Aircraft and landing gear up.
- Landing gear switch "NEUTRAL".
- actuate the EMERGENCY-UNDERCARRIAGE handles ( in sequence 1-2). Actuating force is 22.5 to 45 lbf. (100 - 200 N). The landing gear legs must remain in the extended position (function of spring clips on the operating arms).
- remounting of the operating arm joints to the spindles: landing gear switch "DOWN", move the spindles by means of the stop switches on the operating arms, until their relative position to the articulations is correct.
- introduce latch lever and shift it into the operating position, introduce release elbow lever, lock with spring element. Afterwards perform a functional check: retract and extend the landing gear once.

**Tires**

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

**Attention:** The left wheel attachment bolt has a left hand thread.

**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 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):**

The brakes (actuating lever mounted at the control panel) are equipped with an adjustment mechanism situated on the bowden cable ends above the master brake cylinder (within the landing gear well).

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

- Before bleeding make sure that the level of the brake fluid is near "MIN" (use DOT 4 brake fluid).
- Fill a plastic syringe (approx. 300 ml) and a transparent tube ( $D_i = 6 \text{ mm} / 0.24 \text{ in.}$ ) with brake fluid and fasten them to the nipple of the bleeder on the brake clamp.
- Open the bleeder slowly using an open-jaw spanner (width  $\frac{1}{4}$ " ). Inject the brake fluid into the system with the help of the syringe. Brake fluid and air are discharged from the system into the reserve container in the process. Close the air bleeder.
- Repeat the process until only brake fluid is discharged. Carry out the bleeding on both wheels one after the other. Make sure that the excess brake fluid is sucked out of the reserve container.

The same procedure must be applied in the case of brake fluid replacement.

**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  $\frac{1}{4}$ " screws.

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.

**Caution:** Do not actuate the brake while brake jaws are removed. Otherwise, the brake piston are gouged and make reassembly difficult.

## 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 up to 20,000 ft
	PZL	W-12S	FD-3/75	
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 ... 4/4
Cylinder head temperature meter	Limbach	170.215/001	-	up to 375 °C
Four-element straps	Gadringer	BaGu 5203	40.070/32	
		SchuGu 2700	40.071/05	
	Schroth	Automatic Shoulder belt, left	SL/1-08-C702 (with stop)	
		Automatic Shoulder belt, right	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-V 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 ¼ 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 ¼ in standard ring cutout or 159 mm / 6 ¼ 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		
VHF NAV (VOR)	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
Horizon	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
Turn and Bank Indicator	various	various		
Directional Gyro	R.C.Allen	RCA15AK-2		
Fire Warning System	Stemme			Series equipment
Voltmeter/Ammeter	Filser	SR001		Series equipment