

## 2.5 Landing gear

### 2.5.1 Main landing gear

The main wheel consist of:

- Rim: either:
- a) Tost 5" SBP Penta 125-77,5-1 1/4"  
EB 77,5 mm, Lager 30 mm, GB 120 mm, BS 162 mm  
P/N Co. Tost: 055572
  - b) Cleveland 40-78B  
P/N Co. Tost: 075100
- Tyre: either:
- a) 5.00-5 6PR Condor, P/N Co. Tost: 065091
  - b) 5.00-5 6PR Michelin AIR, P/N Co. Tost: 067511
  - c) Alternatively comparable but certified tyres 5.00-5 6PR can be fitted as long as they match the tolerances in terms of shape and size. They also need to fit into the wheel attachment fork and must not interfere with the landing gear elements or structure.
- Tube: For Tost rim e.g.:  
5.00-5 valve 90° TR87, P/N Co. Tost: 065995
- For Cleveland rim e.g.:  
5.00-5 valve 90° TR67, P/N Co. Tost: 065092
- Brake disc: For Tost rim:  
162-36.3-5 w/o ventilation, P/N Co. Tost: 057272
- For Cleveland rim:  
162-55-5, P/N Co. Tost 057710
- Brake caliper: either:
- a) Cleveland 30-9  
P/N Co. Tost: 075823
  - b) Tost BZT2 5L, DOT4, NPT 1/8  
P/N Co. Tost: 080203

## 2.5.4 Maintenance of landing gear and wheel brake

### Main landing gear

The maintenance of the main wheel is confined to visual inspection of the tire, wheel rim, brake disc and shock absorber elements. If badly soiled, the landing gear should be cleaned immediately. Also: do not forget to clean and lubricate the wheel bearings and shock absorber bearings.

### Tires

Tire pressure should be checked frequently. When the tread is worn, the tire must be replaced.

The tire must be protected from all kinds of grease and oil, as these will attack and damage the rubber.

### Tire pressures:

Main wheel:	$3.5 \pm 0.1$ bar	( $50.8 \pm 1.5$ psi)
Fixed tail wheel:	$2.5 \pm 0.1$ bar	( $35.6 \pm 1.5$ psi)
Retractable tail wheel:	$4.0 \pm 0.1$ bar	( $58.0 \pm 1.5$ psi)

The valves for main and tail wheel tires are on the left-hand side.

In case of a fixed tailwheel, the air pressure of the tail wheel can only be adjusted, when the tail wheel is removed from the fuselage. Optionally a gap of the fuselage and fender can be made, so that the tail wheel valve can directly be filled, see Fig. 2.5-1.

### **NOTE:**

*The area worked on has to be adequately preserved!*

An overview on the different batteries including the numbering and description of possible locations is given in the aircraft flight manual section 7.10 and 7.14.

### Battery types

Batteries that may leak or emit toxic gases (e.g. conventional lead/acid batteries), are not permissible. In detail the following batteries can be used:

1. Avionic
  - a) Batterie below the footrest (Bat. 1)
    - LiFePO4-system: "Avionic battery type 1L"  
(P/N 99.000.1052)
    - Lead-gel-system: "Avionic battery type 1P"  
(P/N 99.000.1051)
  - b) Batterie in the baggage compartment (Bat. 2)
    - LiFePO4-system: "Avionic battery type 2L"  
(P/N 99.000.1054)
    - Lead-gel-system: "Avionic battery type 2P"  
(P/N 99.000.1053)
  - c) Battery in the fin (Bat. 3)
    - LiFePO4-system: "Avionic battery vertical fin Type 1L"  
(AS-P/N 99.000.1061)
    - Lead-gel-system: "Avionic battery vertical fin Type 1P"  
(AS-P/N 99.000.1062)

#### **WARNING:**

*The mass of batteries in the vertical fin and under the front seat has a significant influence on the C of G position. This must be taken into account if battery types with different masses are to be used.*

2. Power-plant batteries in the fuselage
  - a) Battery M1 below footrest
    - "Powerplant battery type 1L" (AS-P/N 99.000.1059)
  - b) Battery M2 in engine compartment
    - "Starter battery M2 for powerplant" (AS-PN 336.64.0002)

## 2.13 Additional equipment and installation

For the installation of additional equipment permanent installed to the AS 33 Es the maintenance instruction "Installation of equipment" according technical note 02-2008 apply (see section 13.4). Specific boundary conditions for the AS 33 Es are described below.

For the installation of further equipment airworthiness requirement CS 22.597 is applicable. According to this requirement at least the following load factors (accelerations) must be demonstrated (if necessary load tests must be performed with these loads):

forwards	15,0 g
backwards	2,5 g
upwards	11,0 g
downwards	8,0 g
sideways	6,0 g

These load factors already include a safety factor of  $j = 1.5!$  Exceeding this requirement, Schleicher recommends to fix subjects which may hurt the pilot during a severe crash, for a forward load factor of 25 g minimum. This is in order to adapt their fittings to the high cockpit strength of the AS 33 Es.

### **Emergency transmitter (ELT)**

The installation of an emergency transmitter must be evaluated for each aircraft in specific under consideration of the specific equipment. General installation drawings were not provided by Schleicher. However, in general the following apply:

The place that suffers the least damage by accidents is the fuselage between both root ribs. Therefore, the ELT should be affixed in range of the baggage compartment with a corresponding mounting. The antenna of the ELT must be attached between the wing spar and the canopy, since all structure is covered by CRP except the fin and a small range over the baggage compartment. The carbon fibre laminates would shield the antenna. During installation, it should be observed that it must be possible to switch the device on and off and also to install and remove it.

### 3 Rigging angles and deflection of control surfaces

#### 3.1 Rigging angles

Part	Measurement point	Reference	values
Wing	y = 0,42 m (16.53 in)	horizontal with the glider in design attitude	+1,0°
Horizontal tail	y = 0,20 m (7.87 in)	horizontal with the glider in design attitude	+0,5°
			-0,5°

To bring the glider into design attitude, place a wedge 1000:54 on the fuselage tail boom in front of the fin and level its upper face horizontally (see also fig. 3.0-1).

#### 3.2 Deflection of control surfaces

	Distance from measuring point to hinge centre-line	Deflection		Tolerance
Rudder	334 mm 13.15 in	right	180 mm / 7.08 in / 31°	10 mm / 0.4 in / 2°
		left	180 mm / 7.08 in / 31°	10 mm / 0.4 in / 2°
Elevator	72 mm 2.83 in	up	24 mm / 0.94 in / 19.1°	2 mm / 0.08 in / 1,6°
		down	24 mm / 0.94 in / 19.1°	2 mm / 0.08 in / 1,6°

#### 3.3 Adjustment of the airbrake

The extension height of the airbrake is measured at the front of the airbrake as the distance between wing surface and the top of the airbrake tape. Measuring must be performed at one of the two mounting pins. The following values must be reached:

Extension height of the airbrake:  $155 \pm 5$  mm (6.1±0.2 in)

## **Section 5**

### 5 Control surface masses and tail-heavy moments

#### 5.1 Introduction

#### 5.2 Control surface masses and tail-heavy moments

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← Prior to take-off, check weight of the trim plates and their secure fixing

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1 Plate (1 kg; 2.2 lbs) in front of the pedals equals a pilot mass of 2.2 kg (4.85 lbs)

Only fitted, when the mounting support for trim weights has been installed (optional extra!).

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### Pre Take-off Check

- Remove tail dolly
- Fasten parachute
- If applicable connect rip-chord for automatic parachute
- Take a correct seat position
- Fasten seat harness (especially tighten lap straps)
- Check free movement of the controls
- Close airbrakes and lock them
- Set trim in take-off position
- Set flaps in take-off position
- Set altimeter
- Check radio transmission
- Check locking position of the landing gear
- Check wind direction
- Recap the take-off interruption procedure
- Close and lock canopy

Attached at the lower side of the instrument panel.

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V <sub>NE</sub> Speed Limit for high altitude		V <sub>NE</sub> Speed Limit for high altitude		V <sub>NE</sub> Speed Limit for high altitude	
Altitude MSL [m]	V <sub>NE</sub> IAS [km/h]	Altitude MSL [ft]	V <sub>NE</sub> IAS [kts]	Altitude MSL [ft]	V <sub>NE</sub> IAS [mph]
0 - 3000	270	0 - 10000	146	0 - 10000	168
< 5000	243	< 15000	135	< 15000	155
< 7000	217	< 20000	124	< 20000	143
< 9000	193	< 25000	114	< 25000	131
< 11000	171	< 30000	104	< 30000	120
< 12000	158	< 40000	84	< 40000	97

The appropriate of these placards is affixed close to the airspeed indicator.

**Minimum equipment:**

Manufacturer	Type	Data Sheet Spec.-No.	Measuring Range	Ref.-No.
<b>Air speed indicator</b>				
Winter	6 FMS 421	TS 10.210/15	40-300km/h	AS-33
	6 FMS 441	TS 10.210/15	40-350km/h	AS-33
	6 FMS 521	TS 10.210/16	50-350km/h	AS-33
	7 FMS 421	TS 10.210/19	40-300km/h	AS-33
	7 FMS 422	TS 10.210/19	0-180mph	AS-33
	7 FMS 423	TS 10.210/19	0-160kts	AS-33
	7 FMS 511	TS 10.210/20	50-300km/h	AS-33
PZL	PRM-035	-	20-350km/h	-
	PR-350-A	-	0-350km/h	-
	PS 08	-	50-300km/h	-
Badin	-	-	50-350km/h	-
<b>Altimeter</b>				
Winter	4 HM 6	TS 10.220/44	0- 6000 m	4060
	4 FGH 10	TS 10.220/46	0-10000 m	4110
	4 FGH 20	TS 10.220/47	0-10000 m	4220
	4 FGH 40	TS 10.220/47	0-20000 ft	4550
PZL	PW-12-C/A/X	-	0-6/10/12 km	-
	WD-10	-	0-10000 m	-
	W-12S-A	-	0-10000 m	-
Jaeger	-	212	0-10000 m	-
<b>Four-part safety harness</b>				
Gadringer	Bagu 5202	40.070/32	-	-
	Schugu 2700	40.071/05	-	-
Schroth	4-01-975202	40.073/11	-	-



## 12.2 Special tools

### **For rigging the wings:**

- 1) Lever for locking and unlocking the airbrakes at the root rib, AS P/N 99.000.8872
- 2) T-shaped handle for outer wing junction, AS P/N 99.000.4663
- 3) Unlocking tool for winglets (not supplied)

### **For rigging the tail plane:**

- 4) Socket wrench for hexagon socket head screws, 8 mm DIN 911 / ISO 2936 (Allen Key)
- 5) Rigging plate AS P/N 99.000.4657

### **For filling the water tank in the fin:**

- 6) Filling kit for tail water tank, AS P/N 99.000.1032

## 12.3 Supply sources for special tools

Special tools with AS-part number can only be obtained through Messrs. Alexander Schleicher

The Allen key 4) are available from all good tool shops, but can also be obtained through Messrs. Alexander Schleicher.

The unlocking tool 3) for example may also be made from a screwdriver which is cut obtuse.

## 13.4 Maintenance instructions

The following Maintenance Instructions are established from time to time as required, in accordance with experience accumulated in operating the AS 33 Es. The Maintenance Manual is to be supplemented in case of new issues of Maintenance Instructions. The applicable maintenance instructions are summarized in the “List of applicable publication” for the AS 33 Es including the actual revision.