



Maintenance Manual for the LS 8-a Sailplane

Registration Signs : _____

Serial Number : _____

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LBA-approval for Chapter 5 and page 6-1 only.

The translation of this manual has received our most careful attention. However, in any case of doubt or ambiguity, the original German text must be considered authoritative.

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- Appendix:
- valid weighing report and equipment list
 - valid control surface mass and moments as well as deflection reports
 - Excerpt of Maintenance Manual of safety Harness FAG-12 (when fitted)
 - Maintenance Manual of C.G. and nose hooks



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Log of Revisions

No.	Pages affected	Description	LBA-Approval Signature / Date
1	0-4, 0-5, 1-1, 1-1a, 2-1 to 2-10, 5-1, 5-2, 10-1, 14-2, 14-4, 14-12	(TB 8011) Tow hook time limit waived by manufacturer, inspection of airbrakes retracting under load, Warning regarding rod end bearings. Removal of the tail fin battery may be used for trimming. (Edition Dec. 2001)	 01. 02 

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Description of Systems

Wing

Wing span 15m with removable winglets.

Aileron Controls

Aileron system activated via pushrods guided in longitudinal motion ball bearings, connection of system by automatic coupling during rigging. Dynamic aileron mass balance in wing.

Elevator Controls

Elevator system activated via pushrods guided in longitudinal motion ball bearings, automatic coupling of system during rigging. 100% mass balance in vertical tail fin pushrod.

Rudder Controls

Rudder system activated via steel cables guided in polyamide tubing, no closed control circuit. 100% mass balance at rudder.

Wheel Brake

Feet operated, activated by bowden cable from rudder pedals.

Air Brakes

Activated via pushrods, guided partly in longitudinal motion ball bearings, partly in plain bearings. Automatic connection of system during rigging. Locking mechanism in wings. Upper surface double height air brakes with spring loaded cover blades. Friction damper in box to prevent oscillations during extension.

Water Ballast System

Two integral tanks per wing, maximum capacity per wing 95 Litres <25.1 US gallons, 20.9 Imp. gal.>. Two valves at under side of wing for loading and dumping. Automatic connection during rigging.

2 ventilation systems: Winglet ventilation or root-rib ventilation.

Ballast tank in the vertical tail fin allowing to compensate C.G. movement due to wing water ballast or weight of heavy pilots, capacity between 3.8 Litres <1.0 US gal., 0.84 Imp.gal.> and 12 Litres <3.2 US gal., 2.64 Imp. gal.>, depending on version (integral or slide-in tank, with or without battery receptacle). Maximum permissible compensation allowed for in tables.

Cockpit

Double fiberglass shell. Controls for air brakes, longitudinal trim and trim position indicator located on left cockpit side, trim locking lever at control stick. Control for tow cable release on left cockpit frame (operating both C.G. hook and nose hook), for pedal adjustment on seat, for ventilation on instrument panel cover, for landing gear and water ballast valves on right side of cockpit, for canopy opening on both sides. When operating right canopy lever over full possible travel, the forward canopy mounting becomes unlocked (emergency canopy release).

Canopy

One piece hinged up front with instrument panel cover. In case of an emergency exit, a spring loaded latch at the rear canopy edge acts as a temporary hinge for clean separation of the canopy from the fuselage. Optional camera mounts may be screwed to canopy frame.

Instrument Panel

Panel lifting together with canopy allowing unobstructed entry and exit. Depending on version, allows for installation of up to 10 instruments including radio.

Baggage Compartment

Baggage compartment behind pilot's shoulders is for light and soft materials only. Permanent installation of batteries or other equipment possible.

Oxygen System

Receptacle for oxygen bottles provided, size of bottles 3 or 4 litres, diameter 100 mm (3.94 in).

Landing Gear

Sprung and retractable, housed in a closed box, right hand operation. Tail skid including cable deflector or tail wheel optional.

Tail Fin Battery

The tail fin battery may removed to decrease Minimum Cockpit Load. It must be fitted in the baggage compartment, if there is no other battery installed.

Description of Systems
General Instructions

WARNING when working at control systems

Protection against corrosion (humidity entering pushrods) required formerly used inspection openings to check minimum reach of thread to be dropped.

Rod end bearings used may have different thread length with identical heads.

Therefore, before adjusting rod end bearings, remaining thread reach must be checked by dismantling.

<u>Thread diameter*pitch</u>	<u>Minimum reach</u>	<u>Rod end nomination</u>
M6*1 (Standard)	17 mm / 0.67 in	EM 6 R (used in single cases only)
M8*1,25 (Standard)	17 mm / 0.67 in	various versions possible
M10*1 (Fine thread)	17 mm / 0.67 in	PM6 long

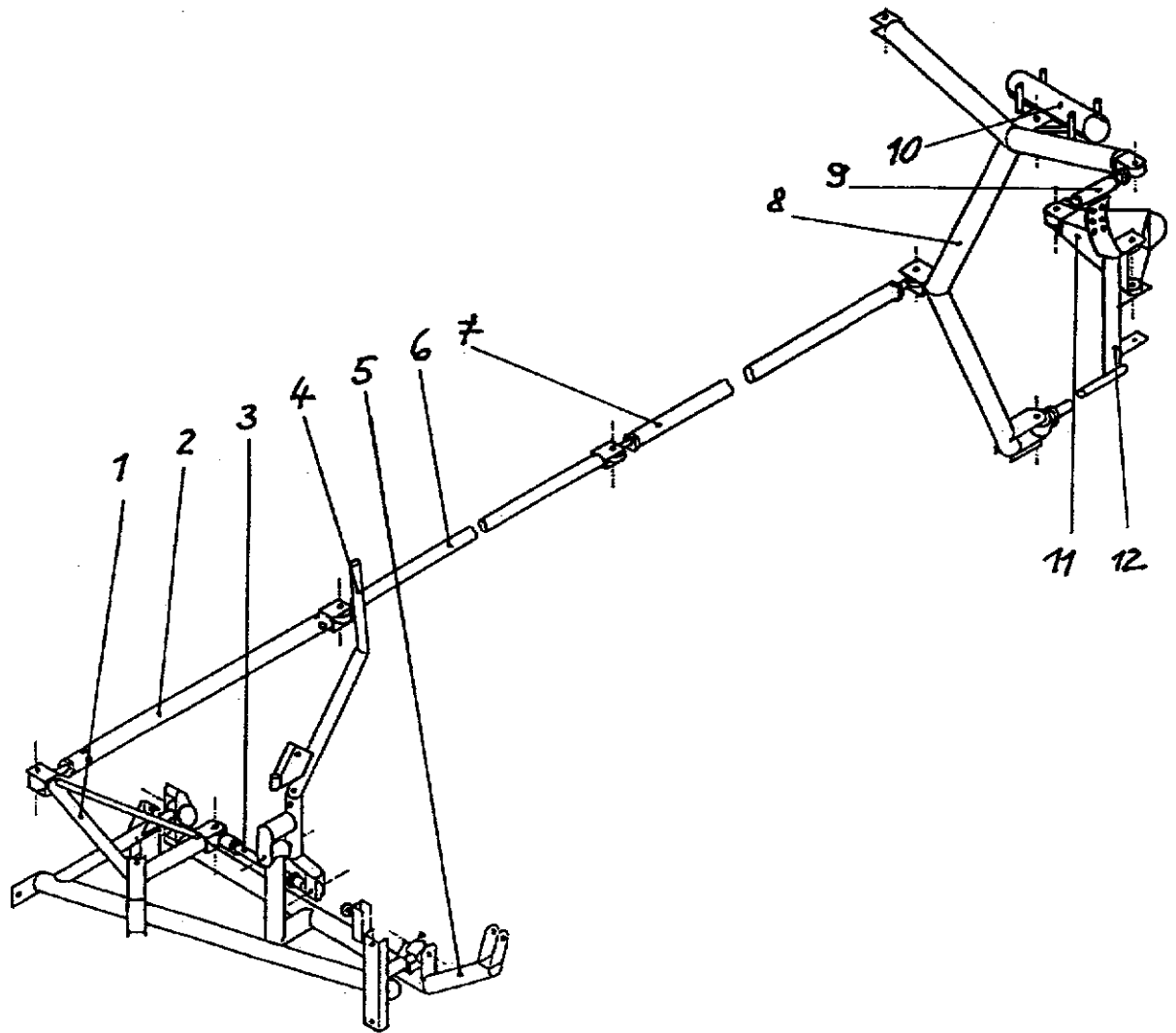
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Aileron System (Fuselage)



No.	Denomination	Drawing	No.	Denomination	Drawing
1	Forward fuselage aileron lever	3R10-72	7	Rear aileron pushrod	4R10-118
2	Forward aileron pushrod	4R10-73	8	Aileron lever	1R10-178
		or 4R10-179	9	Parallelogram pushrod	4R10-49
3	Stick aileron pushrod	4F3-37	10	Aileron lever bearing	4R10-69
4	Control stick	3R3-49	11	Aileron connector	3R10-116
5	Control stick support	1R3-86	12	Automatic connector bearing	3R10-119
6	Middle aileron pushrod	4R10-74			

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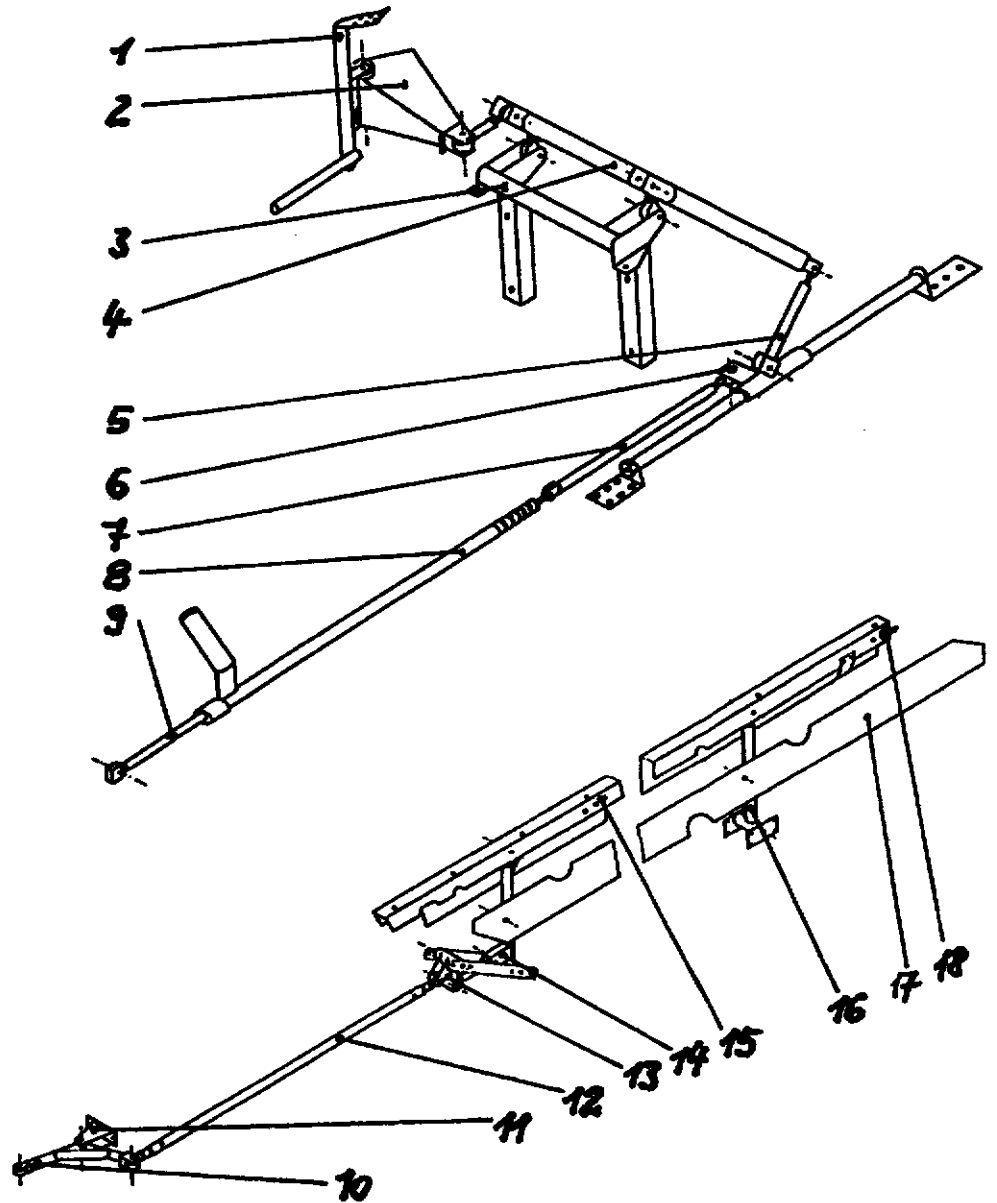
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Air Brake System



Fuselage			Wings		
No.	Denomination	Drawing	No.	Denomination	Drawing
1	Automatic connector bearing	3R10-119	10	Root rib drive lever	3F4-71
2	Air brake connector	3R6-44			or 3F4-64
3	Air brake drive bracket	3R6-54	11	Root rib bracket	4F3-76
4	Air brake drive	3R6-50	12	Wing pushrod	4F4-63
5	Intermediate rod	4R10-77	13	Locking lever	4F4-53
6	Sliding member	4R6-47	14	Inner lever	3F4-51
7	Air brake rod	4R6-59	15	Upper blade	3F4-60
8	Air brake lever	3R6-58	16	Outer lever	3F4-52
9	Lever guide tube	4R6-31	17	Lower blade	3F4-54
			18	Friction brake	

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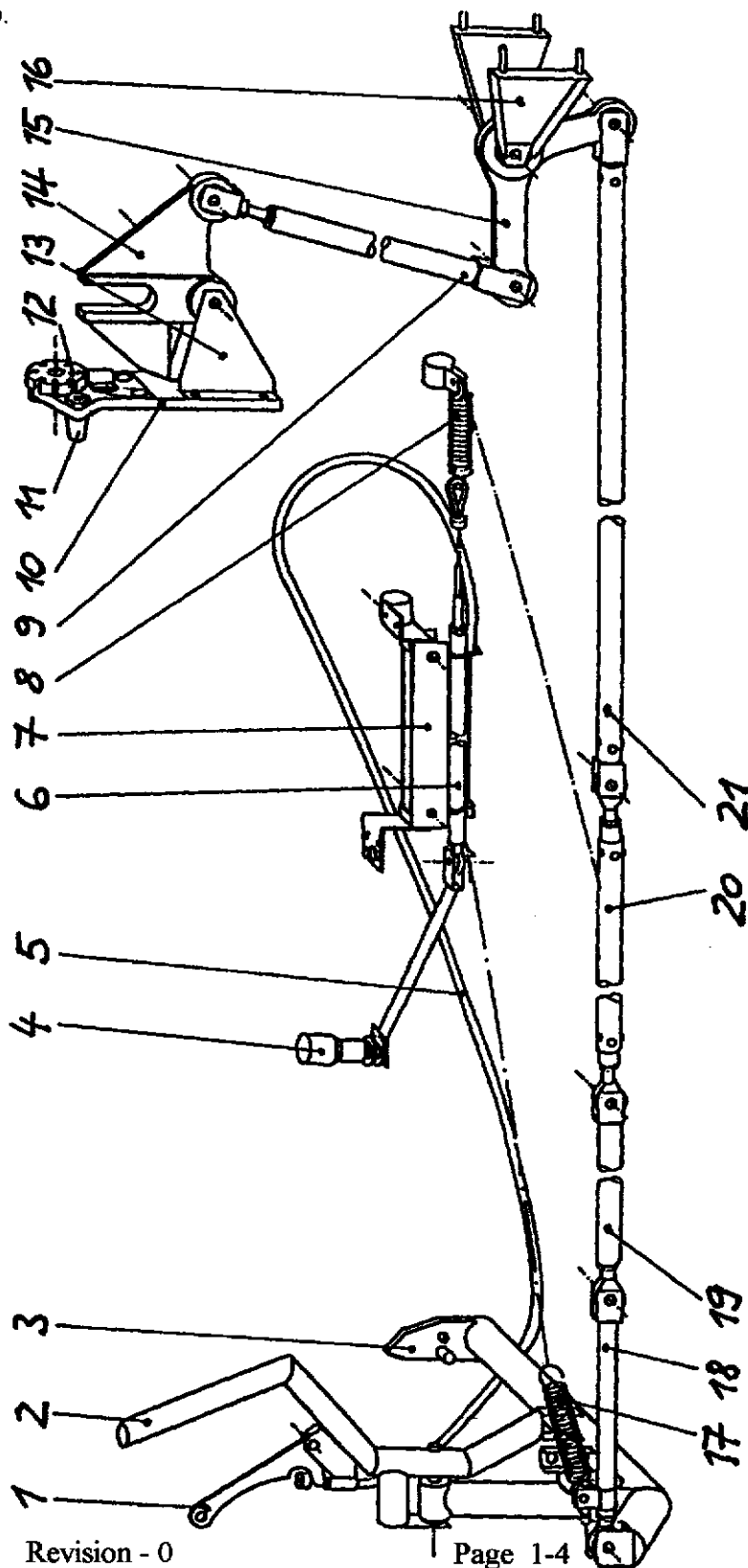
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Elevator System (Fuselage)

The weight of the elevator pushrod in the vertical tail fin is adapted to elevator weight.
See weight value entered in inspection form "Control Surface Weight and Moment" for this serial number
(See Maintenance Manual Page 14-6).

No.	Denomination	Drawing
1	Trim locking lever	4R9-24
2	Control stick	3R3-49
3	Control stick support	1R3-65
4	Trim lever	4R9-95
5	Trim bowden cable	
6	Trim rod	4R9-76
7	Trim locking housing	3R9-74
8	Rear trim spring	
9	Vertical tail fin elevator pushrod	4R3-79
10	Rear horizontal tail bracket	4R4-6
11	Rear tapered bolts	4R4-4
12	Securing nut	4R4-8
13	Elevator connector bracket	4R3-62
14	Automatic connector	3R3-63
15	Elevator lever	4R3-7
16	Elevator lever bracket	4R3-40
17	Forward trim spring	
18	Forward elevator pushrod	4R3-84
19	Elevator pushrod 2	4R3-85
20	Elevator pushrod 3	4R3-76
21	Rear elevator pushrod	4R3-69



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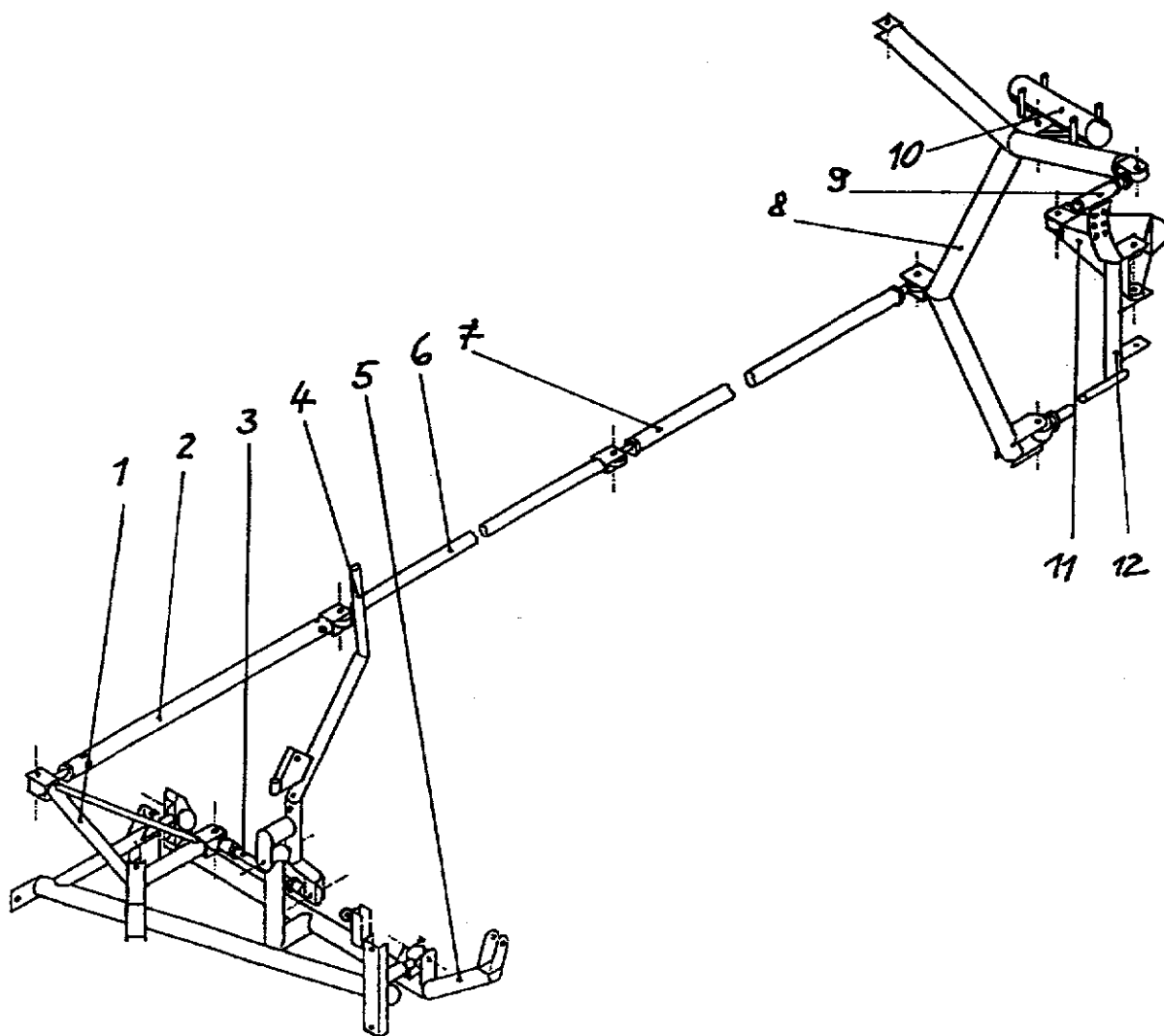
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Aileron System (Wings)

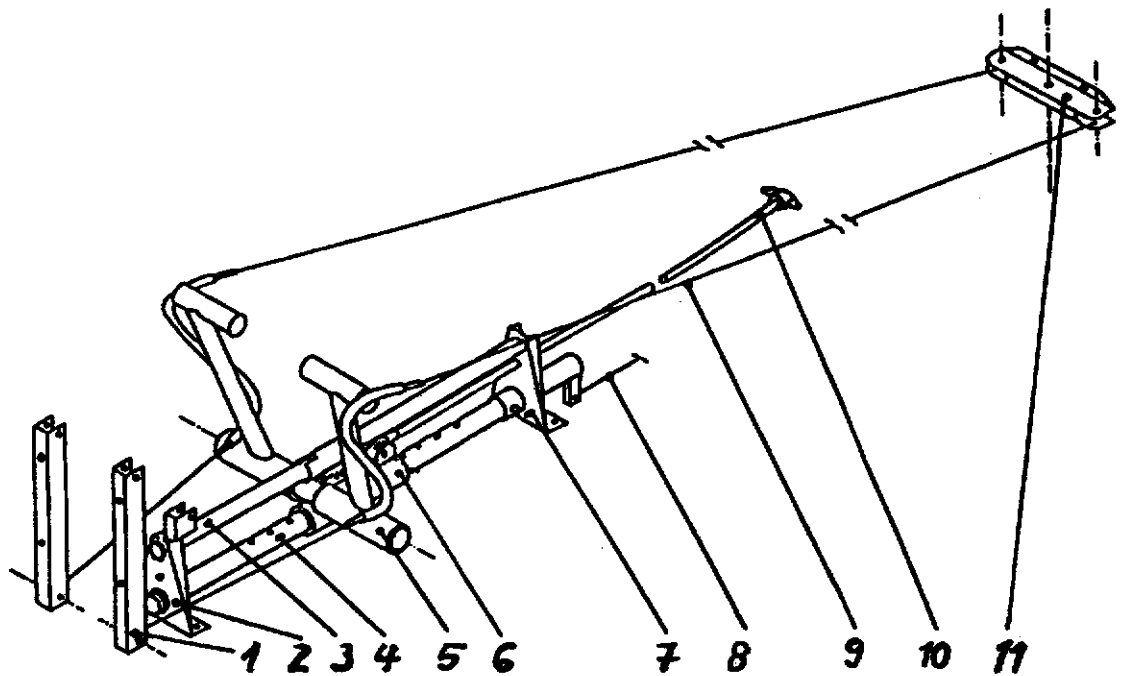
No.	Denomination	Drawing
1	Root rib bracket	4F3-76
2	Root rib aileron drive	3F3-78
3	Right aileron pushrod	4F3-135
	Left aileron pushrod	4F3-139
4	Aileron drive lever	1F3-133
5	Wing aileron drive bracket	4F3-134
6	Aileron drive rod	4F3-137
7	Drive bracket at aileron	4Q1-40
8	Aileron stop	4F32-136



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Rudder System

No.	Denomination	Drawing
1	Canopy opener bracket	4R8-67
2	Forward pedal guide bracket	3R14-14
3	Upper pedal guide tube	4R14-18
4	Lower pedal guide tube	4R14-19
5	Rudder pedal	1R14-21
6	Pedal support	3R14-16
7	Rear pedal guide bracket	3R14-15
8	Wheel brake cable	
9	Rudder cable	
10	Pedal adjustment cable	4R14-31
11	Rudder drive bracket	4S1-10



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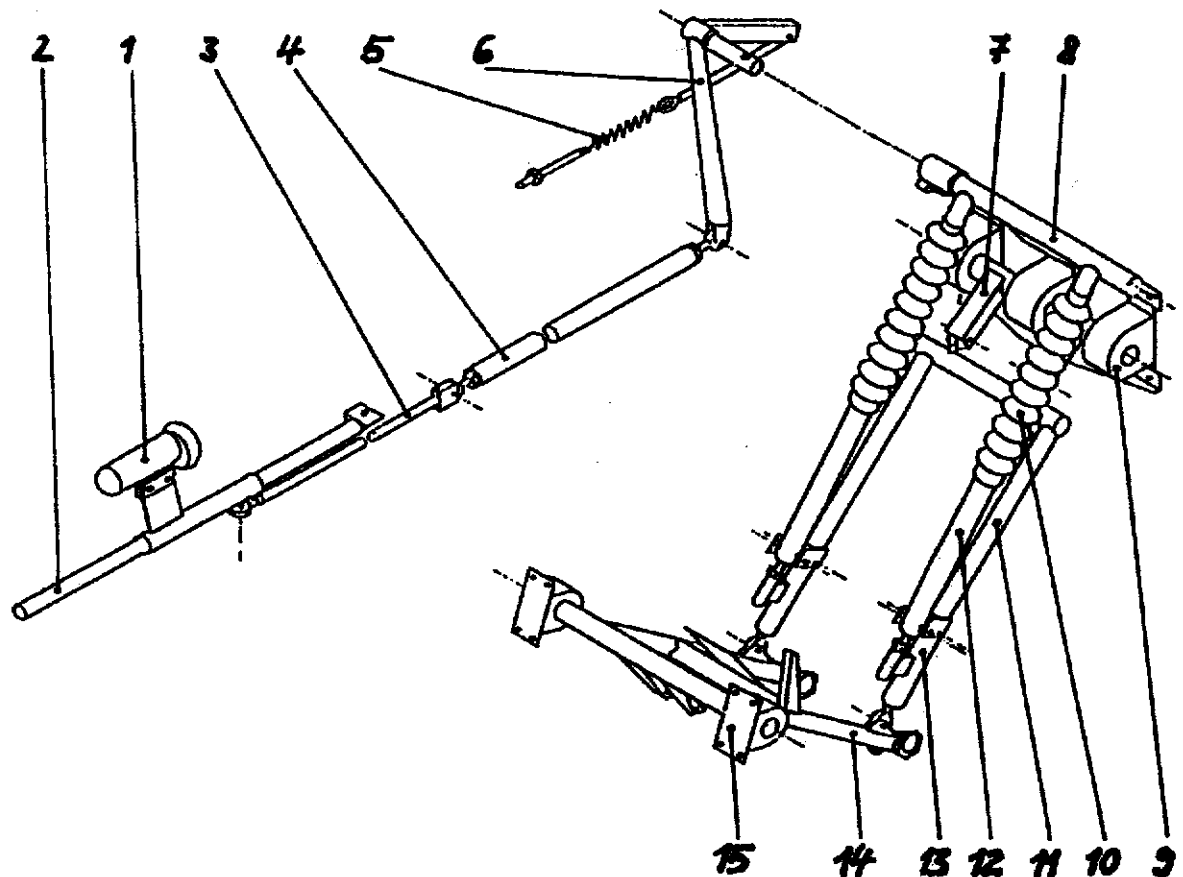
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Landing Gear System

No.	Denomination	Drawing
1	Gear handle	4R2-87
2	Gear handle guide tube	4R2-89
3	Forward landing gear drive rod	4R2-90
4	Rear landing gear drive rod	4R2-112
5	Compensating spring	4R2-49
6	Outer drive	1R2-84
7	Swinging arm	3R2-83
8	Inner drive	3R2-75
9	Rubber torsion element (large unit)	
10	Rubber bellow	
11	Upper folding strut	3R2-74
12	Inner drive sliding tube	4R2-73
13	Lower folding strut	4R2-72
14	Landing gear fork	1R2-1
15	Fork rubber bearing (small unit)	



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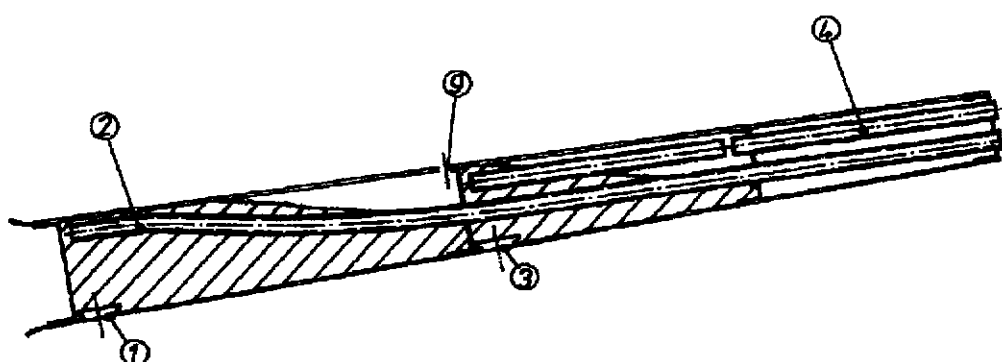
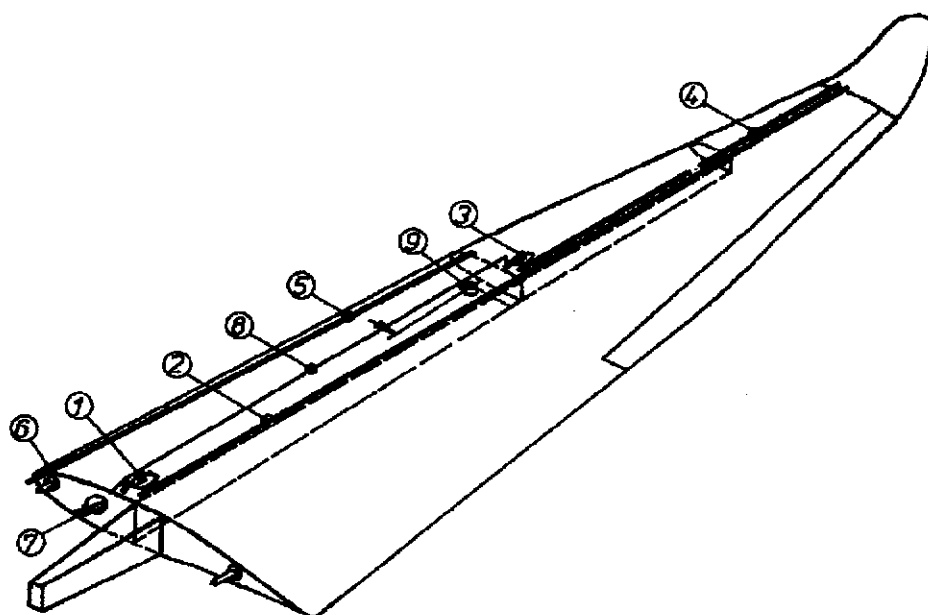
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Wing Water Ballast System with Winglet Ventilation

No. Denomination

- 1 Valve of inner tank
- 2 Ventilation tube of inner tank
- 3 Valve of outer tank
- 4 Ventilation tube of outer tank
- 5 Draining tube of outer tank
- 6 Draining valve for both tanks
- 7 Drive lever
- 8 Cable to valve of outer tank
- 9 Additional ventilation of inner tank



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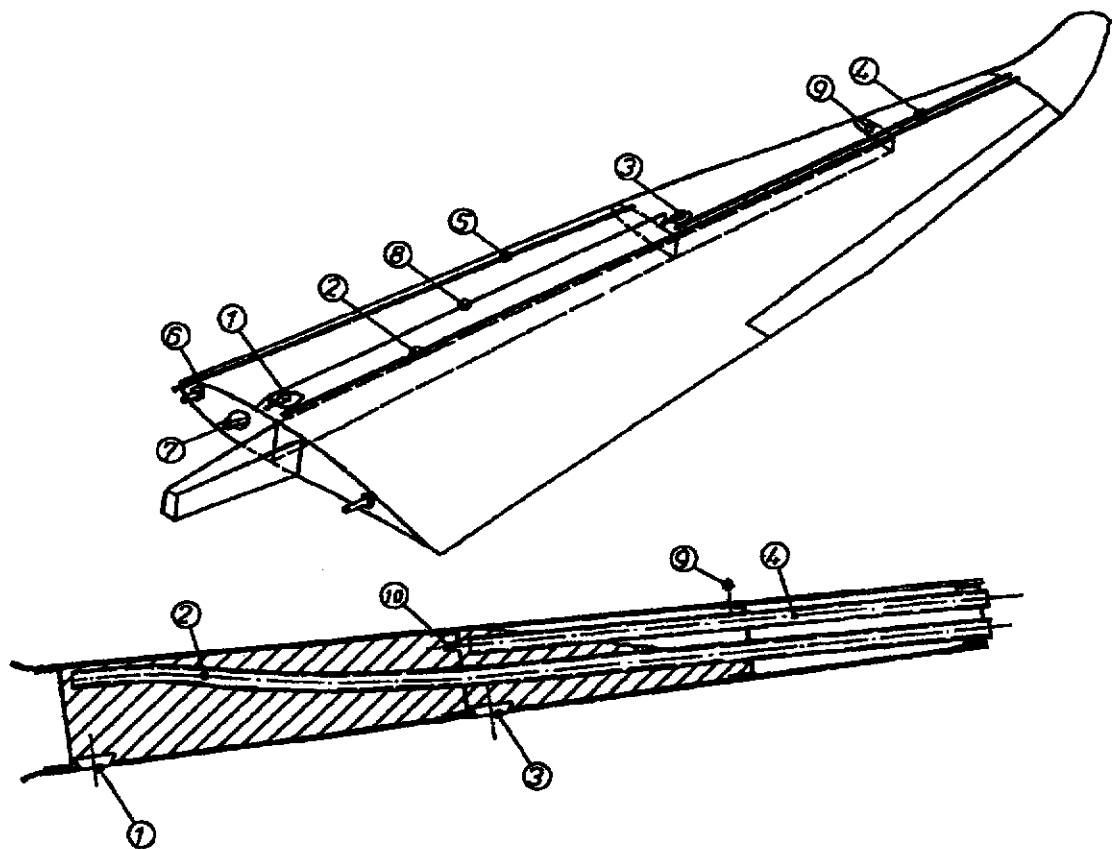
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Wing Water Ballast System with Winglet Ventilation

No. Denomination

- 1 Valve of inner tank
- 2 Ventilation tube of inner tank
- 3 Valve of outer tank
- 4 Ventilation tube of outer tank
- 5 Draining tube of outer tank
- 6 Draining valve for both tanks
- 7 Drive lever
- 8 Cable to valve of outer tank
- 9 Additional ventilation of outer tank



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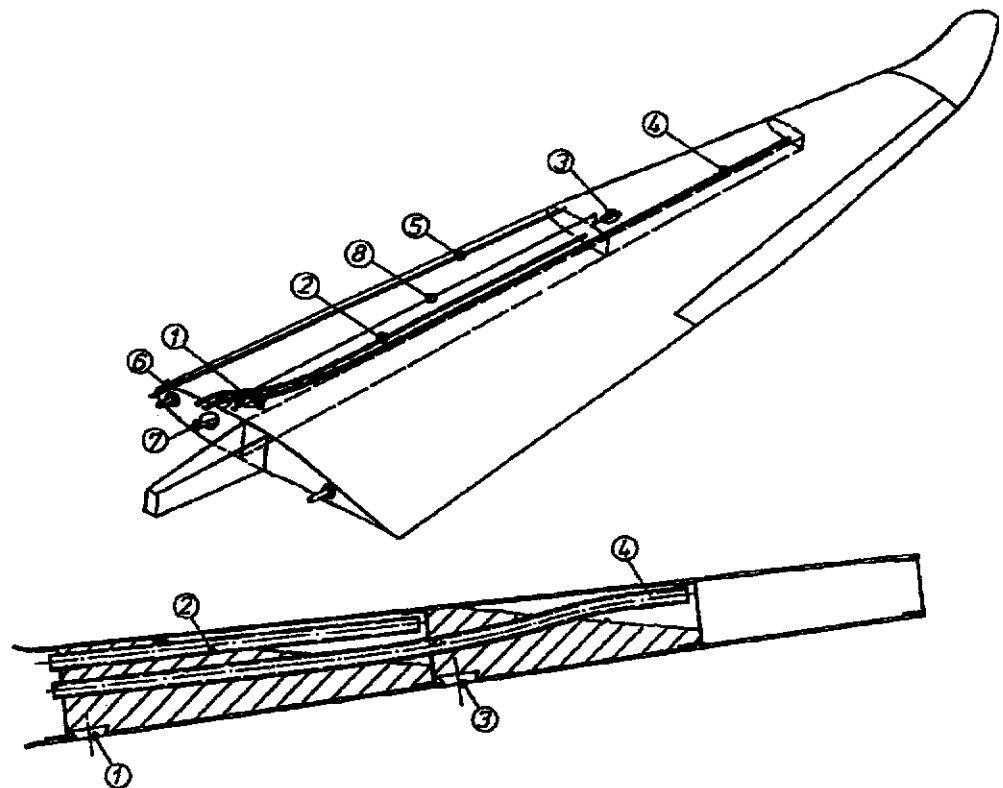
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Wing Water Ballast System with Root-Rib Ventilation

No. Denomination

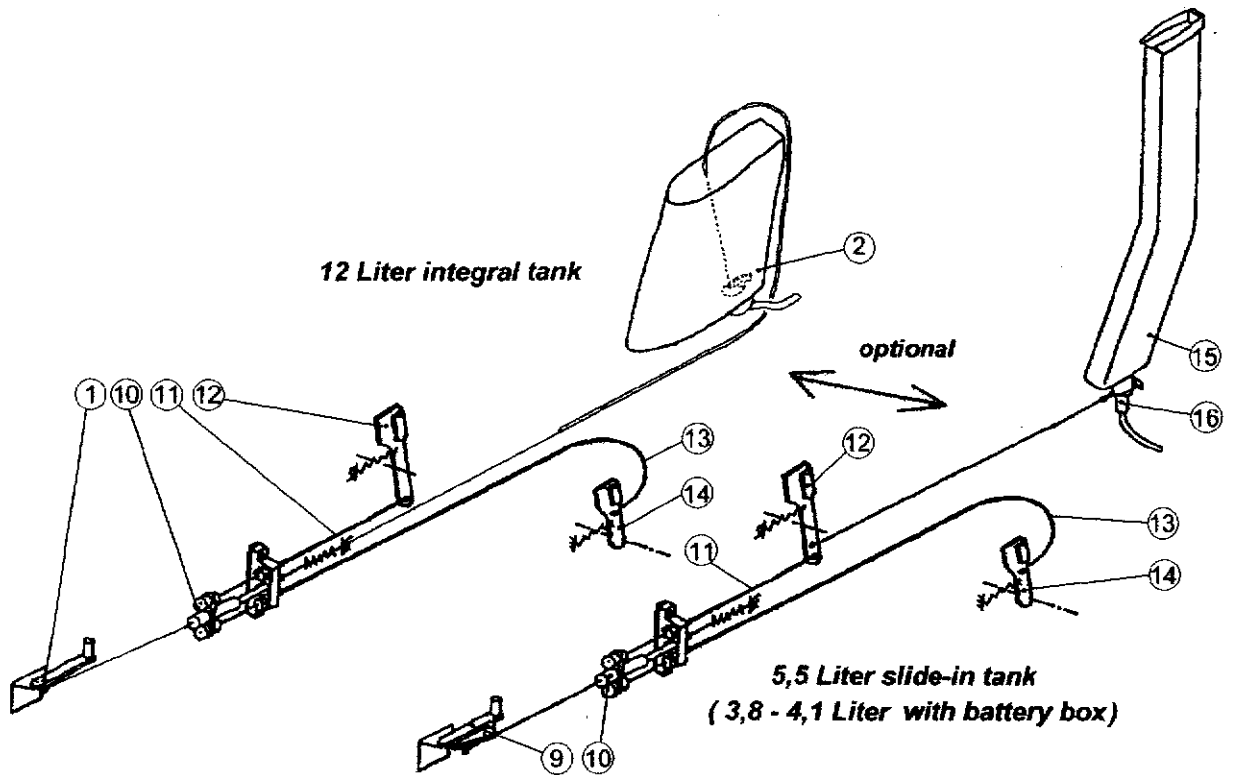
- 1 Valve of inner tank
- 2 Ventilation tube of inner tank
- 3 Valve of outer tank
- 4 Ventilation tube of outer tank
- 5 Draining tube of outer tank
- 6 Draining valve for both tanks
- 7 Drive lever
- 8 Cable to valve of outer tank



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Fuselage Water Ballast System

No.	Denomination	Drawing
1	Cockpit lever (Integral tank)	4R12-141
2	Tail tank valve (Integral tank)	1BR-213
3	Cockpit lever (Slide-in tank)	1BR-188a
	Water ballast drive distributor	1BR-188a
	Right side bowden cable	4R12-129
	Right side fuselage lever	4R12-113
	Left side bowden cable	4R12-130
	Left side fuselage lever	4R12-114
	Slide-in tail tank	3GR-122
	Slide-in tail tank valve	4BR-121



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Weight and Balance

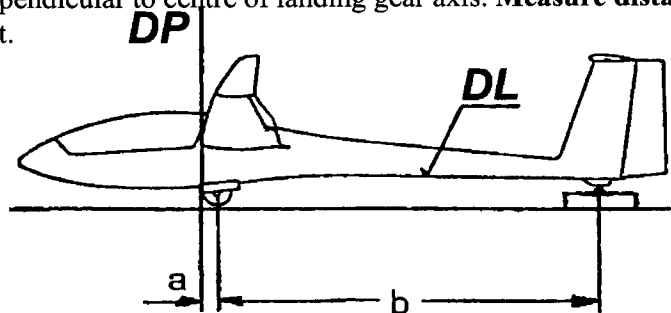
Introduction

This section describes the procedures for establishing the basic empty mass and C.G. position of the sailplane, procedures for determining permissible Cockpit Loading and approved mass limitations. Complying with these procedures, the pilot is able to load the sailplane properly without any additional calculations due to loading limits placarded in the cockpit and provided in the Flight Manual, page 6-2. A comprehensive list of all equipment available for this sailplane is included in chapter 12.

Weighing Procedure

Datum Line <DL>: Under side of fuselage boom placed horizontal
Datum Point <DP>: Leading edge of wing at root

1. **Determine total weight** (Empty or take-off weight) for both wing span versions, in most cases by weighing all parts and adding together. **When a tail fin battery is being used, weighing must always be done with tail fin battery installed.** Weigh mass of tail fin battery separately (3BR-199, 2.5 to 2.7 kg; <5.5 to 6 lbs>). For details see under Calculation of Loading Limits.
2. **Assemble the sailplane** in the 15 m version according to instructions in Flight Manual pages 4-1/2. For in-flight C.G. position, the pilot must be seated in the sailplane.
3. **Raise tail on weighing machine** until datum line is level using wooden blocks or adjustable rack. Check with levelling gauge.
4. **Measure distance ** from tail support to centre of landing gear axis.
5. Using plumb lead, determine points on floor perpendicular to left and right datum points, and points on floor perpendicular to centre of landing gear axis. **Measure distance <a>** from wheel axis to datum point.



6. Determine tail weight and deduct weight of auxiliary support used under 3) to get **net tail weight**.
7. Calculate C.G. position for empty vertical tail fin tank:

$$X_{cg} = \frac{\text{net tail weight} * b}{\text{total weight}} + a$$

8. Calculate C.G. position for full vertical tail fin tank:

$$X_{cg} = \frac{(\text{net tail weight} + \text{tail fin water weight}) * b}{\text{total weight} + \text{tail fin water weight}} + a$$

9. Calculate loading limits according to page 2-2.

Form for Weighing Report for copying see Maintenance Manual, page 14-4.

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Calculation of Loading Limits

1. Determine Minimum Cockpit Load for **full and empty tail fin tank version** following procedure given on page 2-1 from table "Empty Weight C.G. Position", pages 2-6/7 <kg/mm> or pages 2-8/9 <in/lbs>.

When being used in a club, Minimum Cockpit Load should be 70 kg <154 lbs> for empty tail fin tank. If it is higher, permanent ballast may be fitted under the forward seat portion, see Maintenance Manual page 11-1.

Minimum Cockpit Load for **tail fin battery (3BR-199) removed** (and installed in baggage compartment, when required) decreases by 10 kg <22 lbs>.

Finally, resulting **Minimum Cockpit Load for full tail fin tank** should be entered in the following places:

 - a. in weighing report of inspection
 - b. in Flight Manual page 6-2 in **full tail fin tank including tail fin battery** column
 - c. in cockpit under instrument panel cover
 - d. in cockpit on data placard
2. Enter Minimum Cockpit Load for empty tail fin tank without tail fin battery into the following places:
 - a. in Flight Manual page 6-2 in **empty tail fin tank without tail fin battery** column
 - b. in cockpit under instrument panel cover, use smaller font size of this line.
 - c. in cockpit on data placard
3. Enter Minimum Cockpit Load for full tail fin tank without tail fin battery into the following places:
 - a. in Flight Manual page 6-2 in **full tail fin tank without tail fin battery** column
4. Enter Minimum Cockpit Load for empty tail fin tank with tail fin battery into the following places:
 - a. in Flight Manual page 6-2 in **empty tail fin tank with tail fin battery** column
5. Maximum approved Weight of Non-lifting Parts may vary between 244 kg and 253 kg <538 to 558 lbs>, depending on empty weight and empty weight C.G. position.

In contrast to methods used up to now, maximum weight of non-lifting parts can be determined in relation to empty weight and empty weight C.G. position according to table on page 2-4 and 2-5. See also examples on page 2-3.

Maximum weight of Non-lifting Parts should be entered into weighing report.
6. Determine Maximum approved Cockpit Load from table "Empty Weight C.G. Position", pages 2-6/7 <kg/mm> or 2-8/10 <in/lbs>. Maximum Cockpit Load normally should be 110 kg <242 lbs>, as given in empty weight C.G. table. It may be lower due to trim conditions, excessive equipment or repairs.

Calculate Maximum Cockpit Load on weighing report, see also examples on page 2-3.

Resulting Maximum Cockpit Load should be entered in the following places:

 - a. in weighing report of inspection
 - b. in Flight Manual, page 6-2
 - c. on Data Placard in cockpit
7. Empty Weight (perhaps increased by weight of permanently fitted trim ballast) should be entered in the following places:
 - a. in weighing report of inspection
 - b. in Flight Manual page 6-2 for calculation of maximum permissible water ballast weight
8. Battery position during weighing should be entered in the following places:
 - a. in weighing report and equipment list of inspection
 - b. on Data Placard in cockpit
 - c. in weighing report and equipment list of inspection

For permanent installation of trim ballast weights, see Maintenance Manual page 11-1.

Form for Weighing Report see Maintenance Manual, page 14-4.

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Prepared: 01.12.01	Verified: <i>W. Chaplea</i>	Complies:
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Calculation of Loading Limits continued

Examples for calculation of loading limits:

See also Maintenance Manual page 14-4, form Weighing Report

1) Minimum Cockpit Load (tail fin tank empty, with tail fin battery)

For empty weight **265** kg <584 lbs> and empty weight C.G. position **659** mm <25.945 in> Minimum Cockpit Load according to table pages

2-6/7 or 2-8/10 is **80** kg <176 lbs>

Limit value **674** mm <26.535 in> greater than calc. value **659** mm <25.945 in>

Minimum Cockpit Load (tail fin tank empty, **no tail fin battery**) is **70** kg <154 lbs>

2) Minimum Cockpit Load (tail fin tank **4.1** kg <9 lbs> full, with tail fin battery)

For empty weight **269.1** kg <593 lbs>, new empty weight C.G. position **715** mm <28.150 in>, Minimum Cockpit Load according to table pages

2-6/7 or 2-8/10 is **95** kg <209 lbs>

Limit value **718** mm <28.268 in> greater than calc. value **715** mm <28.150 in>

Minimum Cockpit Load (tail fin tank **12** kg <26 lbs> full, with tail fin battery)

For empty weight **277** kg <611 lbs>, new empty weight C.G. position

819 mm <32.244 in>, Minimum Cockpit Load according to table pages

2-6/7 or 2-8/10 is **140** kg <309 lbs>

Limit value **847** mm <33.346 in> greater than calc. value **819** mm <32.244 in>

3) Maximum Weight of Non-lifting Parts

Maximum non-lifting parts weight at empty weight **265** kg <584 lbs> and empty weight C.G. position **659** mm <25.945 in> is according to table pages 2-4/5

..... **244** kg <538 lbs>

4) Maximum permissible Cockpit Load

Fuselage with complete equipment,

battery, canopy and main pins **128.2** kg <283 lbs>

Horizontal tail **6.5** kg <14 lbs>

Cockpit Load (maximum 110 kg <242 lbs>) **109** kg <240 lbs>

Weight of Non-lifting Parts **243.7** kg <537 lbs>

Maximum Cockpit Load (max. 110 kg <242 lbs>) **109** kg <240 lbs>

Maximum all-up mass **525** kg <1157 lbs>

Entry in Flight Manual, page 6-2, for example above:

	Empty Weight	C.G. position	Max. Cockpit Load	Minimum Cockpit Load				Permanently fitted Ballast Mass		Tail Tank-Volume	Date / Inspector
				<i>WITH</i>		<i>WITHOUT</i>		front	rear		
				Tail Batterie and Tail Tank full	Tail Batterie and Tail Tank empty	Tail Batterie and Tail Tank full	Tail Batterie and Tail Tank empty				
	[kg]	[mm]	[kg]	[kg]	[kg]	[kg]	[kg]	[kg]	[ltr]		
15m	265	659	109	140	80	130	70	---	---	12.0	19.Jun.2001 G

The discrepancy between Maximum Cockpit Load of 109 kg <240 lbs> and Minimum Cockpit Load of 140 kg <309 lbs> with tail fin tank full (here entered for 12 Litre tank) indicates, that before each take off a functional check for the tail fin tank valve is required. If passage cannot be verified while blowing air through the valve, then perhaps water is still in the tank and therefore the high Minimum Cockpit Load value.

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Calculation of Maximum Weight of Non-Lifting Parts

Maximum weight of non-lifting parts of 253 kg <588 lbs> must be reduced in relation to empty weight and empty weight C.G. position Xs according to table below (For lbs/inch values see following page).

Example: For empty weight C.G. position of 665 mm <26.181 in> and empty weight of 255 kg <562 lbs> the permissible weight of non-lifting parts is 244 kg <538 lbs>.

Empty Weight G <kg>	Empty Weight C.G. position Xs <mm>										
	from 580	from 600	from 620	from 640	from 660	from 680	from 700	from 720	from 740	from 760	from 780
	to 599	to 619	to 639	to 659	to 679	to 699	to 719	to 739	to 759	to 779	to 799
245-246				244	244	244	246	247	248	249	250
246-147				244	244	245	246	247	248	249	250
247-248				244	244	245	246	247	248	249	250
248-249				244	244	245	246	247	248	249	251
249-250				244	244	245	246	247	248	250	251
250-251				244	244	245	246	247	249	250	251
251-252				244	244	245	246	247	249	250	251
252-253				244	244	245	246	248	249	250	251
253-254				244	244	245	247	248	249	250	251
254-255				244	244	245	247	248	249	250	251
255-256				244	244	246	247	248	249	250	252
256-257				244	244	246	247	248	249	251	252
257-258				244	245	246	247	248	249	251	252
258-259			244	244	245	246	247	248	250	251	252
259-260			244	244	245	246	247	248	250	251	252
260-261			244	244	245	246	247	249	250	251	
261-262			244	244	245	246	247	249	250	251	
262-263			244	244	245	246	248	249	250	251	
263-264			244	244	245	246	248	249	250	251	
264-265			244	244	245	247	248	249	250	252	
265-266			244	244	245	247	248	249	250	252	
266-267			244	244	246	247	248	249	251	252	
267-268			244	244	246	247	248	249	251	252	
268-269			244	244	246	247	248	250	251	252	
269-270			244	245	246	247	248	250	251	252	
270-271			244	245	246	247	249	250	251	252	
271-272			244	245	246	247	249	250	251	253	
272-273			244	245	246	247	249	250	251	253	
273-274			244	245	246	248	249	250	251	253	
274-275		244	244	245	246	248	249	250	252		
275-276		244	244	245	247	248	249	250	252		
276-277		244	244	245	247	248	249	251	252		
277-278		244	244	245	247	248	249	251	252		
278-279		244	244	246	247	248	249	251	252		
279-280		244	244	246	247	248	250	251	252		
280-281		244	244	246	247	248	250	251	252		
281-282		244	244	246	247	248	250	251	253		
282-283		244	245	246	247	249	250	251	253		
283-284		244	245	246	247	249	250	251	253		
284-285		244	245	246	247	249	250	252	253		
285-286		244	245	246	248	249	250	252	253		
286-287		244	245	246	248	249	250	252	253		
287-288		244	245	246	248	249	251	252	253		
288-289		244	245	247	248	249	251	252	253		
289-290		244	245	247	248	249	251	252	254		
290-291		244	245	247	248	250	251	252			

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Calculation of Maximum Weight of Non-Lifting Parts

Maximum weight of non-lifting parts of 558 lbs <253 kg> must be reduced in relation to empty weight and empty weight C.G. position Xs according to table below (For kg/mm values see preceding page).

Example: For empty weight C.G. position of 26.181 in <665 mm> and empty weight of 562 lbs <255 kg> the permissible weight of non-lifting parts is 538 lbs <244 kg>.

Empty Weight G <lbs>	Empty Weight C.G. position Xs <in>										
	from 22.835 to 23.583	from 23.622 to 24.370	from 24.409 to 25.157	from 25.197 to 25.945	From 25.984 to 26.732	from 26.772 to 27.520	from 27.559 to 28.307	from 28.346 to 29.094	from 29.134 to 29.882	From 29.921 to 30.669	from 30.709 to 31.457
540-542				538	538	538	542	545	547	549	551
542-545				538	538	540	542	545	547	549	551
545-547				538	538	540	542	545	547	549	551
547-549				538	538	540	542	545	547	549	553
549-551				538	538	540	542	545	547	551	553
551-553				538	538	540	542	545	549	551	553
553-556				538	538	540	542	545	549	551	553
556-558				538	538	540	542	547	549	551	553
558-560				538	538	540	545	547	549	551	553
560-562				538	538	540	545	547	549	551	553
562-564				538	538	542	545	547	549	551	556
564-567				538	538	542	545	547	549	553	556
567-569				538	540	542	545	547	549	553	556
569-571			538	538	540	542	545	547	551	553	556
571-573			538	538	540	542	545	547	551	553	556
573-575			538	538	540	542	545	549	551	553	
575-578			538	538	540	542	545	549	551	553	
578-580			538	538	540	542	547	549	551	553	
580-582			538	538	540	542	547	549	551	553	
582-584			538	538	540	545	547	549	551	556	
584-586			538	538	540	545	547	549	551	556	
586-589			538	538	542	545	547	549	553	556	
589-591			538	538	542	545	547	549	553	556	
591-593			538	538	542	545	547	551	553	556	
593-595			538	540	542	545	547	551	553	556	
595-597			538	540	542	545	549	551	553	556	
597-600			538	540	542	545	549	551	553	558	
600-602			538	540	542	545	549	551	553	558	
602-604			538	540	542	547	549	551	553	558	
604-606		538	538	540	542	547	549	551	556		
606-608		538	538	540	545	547	549	551	556		
608-611		538	538	540	545	547	549	553	556		
611-613		538	538	540	545	547	549	553	556		
613-615		538	538	542	545	547	549	553	556		
615-617		538	538	542	545	547	551	553	556		
617-619		538	538	542	545	547	551	553	556		
619-622		538	538	542	545	547	551	553	558		
622-624		538	540	542	545	549	551	553	558		
624-626		538	540	542	545	549	551	553	558		
626-628		538	540	542	545	549	551	556	558		
628-631		538	540	542	547	549	551	556	558		
631-633		538	540	542	547	549	551	556	558		
633-635		538	540	542	547	549	553	556	558		
635-637		538	540	545	547	549	553	556	558		
637-639		538	540	545	547	549	553	556	560		
639-642		538	540	545	547	551	553	556			

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Empty weight <kg>	Empty Weight C.G. Range (mm) at Maximum Cockpit Load of 110 kg and at Minimum Cockpit Load of:						
	70 kg	75 kg	80 kg	85 kg	90 kg	95 kg	100 kg
245	658 -660	658 -678	658 -696	658 -714	658 -732	658 -749	658 -767
246	657 -659	657 -677	657 -695	657 -713	657 -730	657 -748	657 -765
247	655 -658	655 -676	655 -694	655 -711	655 -729	655 -747	655 -764
248	654 -657	654 -675	654 -693	654 -710	654 -728	654 -745	654 -763
249	652 -656	652 -674	652 -691	652 -709	652 -726	652 -744	652 -761
250	651 -655	651 -673	651 -690	651 -708	651 -725	651 -742	651 -760
251	649 -654	649 -672	649 -689	649 -706	649 -724	649 -741	649 -758
252	648 -653	648 -671	648 -688	648 -705	648 -723	648 -740	648 -757
253	647 -652	647 -669	647 -687	647 -704	647 -721	647 -738	647 -755
254	645 -651	645 -668	645 -686	645 -703	645 -720	645 -737	645 -754
255	644 -650	644 -667	644 -685	644 -702	644 -719	644 -736	644 -753
256	642 -649	642 -666	642 -683	642 -700	642 -717	642 -734	642 -751
257	641 -648	641 -665	641 -682	641 -699	641 -716	641 -733	641 -750
258	639 -647	639 -664	639 -681	639 -698	639 -715	639 -732	639 -748
259	638 -646	638 -663	638 -680	638 -697	638 -714	638 -730	638 -747
260	637 -645	637 -662	637 -679	637 -696	637 -713	637 -729	637 -746
261	635 -644	635 -661	635 -678	635 -695	635 -711	635 -728	635 -744
262	634 -643	634 -660	634 -677	634 -694	634 -710	634 -727	634 -743
263	633 -642	633 -659	633 -676	633 -692	633 -709	633 -725	633 -742
264	631 -642	631 -658	631 -675	631 -691	631 -708	631 -724	631 -741
265	630 -641	630 -657	630 -674	630 -690	630 -707	630 -723	630 -739
266	629 -640	629 -656	629 -673	629 -689	629 -706	629 -722	629 -738
267	627 -639	627 -655	627 -672	627 -688	627 -704	627 -721	627 -737
268	626 -638	626 -654	626 -671	626 -687	626 -703	626 -719	626 -735
269	625 -637	625 -653	625 -670	625 -686	625 -702	625 -718	625 -734
270	623 -636	623 -653	623 -669	623 -685	623 -701	623 -717	623 -733
271	622 -635	622 -652	622 -668	622 -684	622 -700	622 -716	622 -732
272	621 -634	621 -651	621 -667	621 -683	621 -699	621 -715	621 -731
273	620 -634	620 -650	620 -666	620 -682	620 -698	620 -714	620 -729
274	618 -633	618 -649	618 -665	618 -681	618 -697	618 -712	618 -728
275	617 -632	617 -648	617 -664	617 -680	617 -696	617 -711	617 -727
276	616 -631	616 -647	616 -663	616 -679	616 -694	616 -710	616 -726
277	615 -630	615 -646	615 -662	615 -678	615 -693	615 -709	615 -725
278	614 -629	614 -645	614 -661	614 -677	614 -692	614 -708	614 -723
279	612 -629	612 -644	612 -660	612 -676	612 -691	612 -707	612 -722
280	611 -628	611 -643	611 -659	611 -675	611 -690	611 -706	611 -721
281	610 -627	610 -643	610 -658	610 -674	610 -689	610 -705	610 -720
282	609 -626	609 -642	609 -657	609 -673	609 -688	609 -704	609 -719
283	608 -625	608 -641	608 -656	608 -672	608 -687	608 -702	608 -718
284	607 -625	607 -640	607 -655	607 -671	607 -686	607 -701	607 -717
285	605 -624	605 -639	605 -655	605 -670	605 -685	605 -700	605 -715
286	604 -623	604 -638	604 -654	604 -669	604 -684	604 -699	604 -714
287	603 -622	603 -638	603 -653	603 -668	603 -683	603 -698	603 -713
288	602 -621	602 -637	602 -652	602 -667	602 -682	602 -697	602 -712
289	601 -621	601 -636	601 -651	601 -666	601 -681	601 -696	601 -711
290	600 -620	600 -635	600 -650	600 -665	600 -680	600 -695	600 -710

Calculated C.G. position for weighed empty weight must be within limit values. Related cockpit loads are permissible Minimum Cockpit Load and Maximum Cockpit Load.

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continued from page 2-6

Empty weight <kg>	Empty Weight C.G. Range (mm) at Maximum Cockpit Load of 110 kg and at Minimum Cockpit Load of:					
	105 kg	110 kg	120 kg	130 kg	140 kg	150 kg
245	658 -784	658 -802	658 -836	658 -871	658 -906	658 -940
246	657 -783	657 -800	657 -835	657 -869	657 -904	657 -938
247	655 -781	655 -799	655 -833	655 -867	655 -902	655 -936
248	654 -780	654 -797	654 -831	654 -865	654 -899	654 -933
249	652 -778	652 -795	652 -829	652 -863	652 -897	652 -931
250	651 -777	651 -794	651 -828	651 -862	651 -895	651 -929
251	649 -775	649 -792	649 -826	649 -860	649 -894	649 -927
252	648 -774	648 -791	648 -824	648 -858	648 -892	648 -925
253	647 -772	647 -789	647 -823	647 -856	647 -890	647 -923
254	645 -771	645 -788	645 -821	645 -854	645 -888	645 -921
255	644 -769	644 -786	644 -819	644 -853	644 -886	644 -919
256	642 -768	642 -785	642 -818	642 -851	642 -884	642 -917
257	641 -766	641 -783	641 -816	641 -849	641 -882	641 -915
258	639 -765	639 -782	639 -814	639 -847	639 -880	639 -913
259	638 -764	638 -780	638 -813	638 -846	638 -878	638 -911
260	637 -762	637 -779	637 -811	637 -844	637 -876	637 -909
261	635 -761	635 -777	635 -810	635 -842	635 -875	635 -907
262	634 -759	634 -776	634 -808	634 -840	634 -873	634 -905
263	633 -758	633 -774	633 -807	633 -839	633 -871	633 -903
264	631 -757	631 -773	631 -805	631 -837	631 -869	631 -901
265	630 -755	630 -772	630 -803	630 -835	630 -867	630 -899
266	629 -754	629 -770	629 -802	629 -834	629 -866	629 -897
267	627 -753	627 -769	627 -800	627 -832	627 -864	627 -896
268	626 -751	626 -767	626 -799	626 -831	626 -862	626 -894
269	625 -750	625 -766	625 -797	625 -829	625 -860	625 -892
270	623 -749	623 -765	623 -796	623 -827	623 -859	623 -890
271	622 -748	622 -763	622 -795	622 -826	622 -857	622 -888
272	621 -746	621 -762	621 -793	621 -824	621 -855	621 -886
273	620 -745	620 -761	620 -792	620 -823	620 -854	620 -885
274	618 -744	618 -759	618 -790	618 -821	618 -852	618 -883
275	617 -742	617 -758	617 -789	617 -820	617 -850	617 -881
276	616 -741	616 -757	616 -787	616 -818	616 -849	616 -879
277	615 -740	615 -755	615 -786	615 -817	615 -847	615 -878
278	614 -739	614 -754	614 -785	614 -815	614 -846	614 -876
279	612 -738	612 -753	612 -783	612 -814	612 -844	612 -874
280	611 -736	611 -752	611 -782	611 -812	611 -842	611 -873
281	610 -735	610 -750	610 -780	610 -811	610 -841	610 -871
282	609 -734	609 -749	609 -779	609 -809	609 -839	609 -869
283	608 -733	608 -748	608 -778	608 -808	608 -838	608 -867
284	607 -732	607 -747	607 -776	607 -806	607 -836	607 -866
285	605 -730	605 -745	605 -775	605 -805	605 -835	605 -864
286	604 -729	604 -744	604 -774	604 -803	604 -833	604 -863
287	603 -728	603 -743	603 -773	603 -802	603 -832	603 -861
288	602 -727	602 -742	602 -771	602 -801	602 -830	602 -859
289	601 -726	601 -741	601 -770	601 -799	601 -829	601 -858
290	600 -725	600 -739	600 -769	600 -798	600 -827	600 -856

Partly, given values for Minimum Cockpit Load exceed permissible Maximum Cockpit Load considerably. These values are required for the use of the vertical tail fin ballast tank as a distinct warning, that its use is limited.

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Empty Weight (lbs)	Empty Weight C.G. Range (inches) at Maximum Cockpit Load of 242 lbs and for a Minimum Cockpit Load of:					
	154 lbs	165 lbs	176 lbs	187 lbs	198 lbs	209 lbs
540	25.906 -25.984	25.906 -26.693	25.906 -27.402	25.906 -28.110	25.906 -28.819	25.906 -29.488
542	25.866 -25.945	25.866 -26.654	25.866 -27.362	25.866 -28.071	25.866 -28.740	25.866 -29.449
545	25.787 -25.906	25.787 -26.614	25.787 -27.323	25.787 -27.992	25.787 -28.701	25.787 -29.409
547	25.748 -25.866	25.748 -26.575	25.748 -27.283	25.748 -27.953	25.748 -28.661	25.748 -29.331
549	25.669 -25.827	25.669 -26.535	25.669 -27.205	25.669 -27.913	25.669 -28.583	25.669 -29.291
551	25.630 -25.787	25.630 -26.496	25.630 -27.165	25.630 -27.874	25.630 -28.543	25.630 -29.213
553	25.551 -25.748	25.551 -26.457	25.551 -27.126	25.551 -27.795	25.551 -28.504	25.551 -29.173
556	25.512 -25.709	25.512 -26.417	25.512 -27.087	25.512 -27.756	25.512 -28.465	25.512 -29.134
558	25.472 -25.669	25.472 -26.339	25.472 -27.047	25.472 -27.717	25.472 -28.386	25.472 -29.055
560	25.394 -25.630	25.394 -26.299	25.394 -27.008	25.394 -27.677	25.394 -28.346	25.394 -29.016
562	25.354 -25.591	25.354 -26.260	25.354 -26.969	25.354 -27.638	25.354 -28.307	25.354 -28.976
564	25.276 -25.551	25.276 -26.220	25.276 -26.890	25.276 -27.559	25.276 -28.228	25.276 -28.898
567	25.236 -25.512	25.236 -26.181	25.236 -26.850	25.236 -27.520	25.236 -28.189	25.236 -28.858
569	25.157 -25.472	25.157 -26.142	25.157 -26.811	25.157 -27.480	25.157 -28.150	25.157 -28.819
571	25.118 -25.433	25.118 -26.102	25.118 -26.772	25.118 -27.441	25.118 -28.110	25.118 -28.740
573	25.079 -25.394	25.079 -26.063	25.079 -26.732	25.079 -27.402	25.079 -28.071	25.079 -28.701
575	25.000 -25.354	25.000 -26.024	25.000 -26.693	25.000 -27.362	25.000 -27.992	25.000 -28.661
578	24.961 -25.315	24.961 -25.984	24.961 -26.654	24.961 -27.323	24.961 -27.953	24.961 -28.622
580	24.921 -25.276	24.921 -25.945	24.921 -26.614	24.921 -27.244	24.921 -27.913	24.921 -28.543
582	24.843 -25.276	24.843 -25.906	24.843 -26.575	24.843 -27.205	24.843 -27.874	24.843 -28.504
584	24.803 -25.236	24.803 -25.866	24.803 -26.535	24.803 -27.165	24.803 -27.835	24.803 -28.465
586	24.764 -25.197	24.764 -25.827	24.764 -26.496	24.764 -27.126	24.764 -27.795	24.764 -28.425
589	24.685 -25.157	24.685 -25.787	24.685 -26.457	24.685 -27.087	24.685 -27.717	24.685 -28.386
591	24.646 -25.118	24.646 -25.748	24.646 -26.417	24.646 -27.047	24.646 -27.677	24.646 -28.307
593	24.606 -25.079	24.606 -25.709	24.606 -26.378	24.606 -27.008	24.606 -27.638	24.606 -28.268
595	24.528 -25.039	24.528 -25.709	24.528 -26.339	24.528 -26.969	24.528 -27.598	24.528 -28.228
597	24.488 -25.000	24.488 -25.669	24.488 -26.299	24.488 -26.929	24.488 -27.559	24.488 -28.189
600	24.449 -24.961	24.449 -25.630	24.449 -26.260	24.449 -26.890	24.449 -27.520	24.449 -28.150
602	24.409 -24.961	24.409 -25.591	24.409 -26.220	24.409 -26.850	24.409 -27.480	24.409 -28.110
604	24.331 -24.921	24.331 -25.551	24.331 -26.181	24.331 -26.811	24.331 -27.441	24.331 -28.031
606	24.291 -24.882	24.291 -25.512	24.291 -26.142	24.291 -26.772	24.291 -27.402	24.291 -27.992
608	24.252 -24.843	24.252 -25.472	24.252 -26.102	24.252 -26.732	24.252 -27.323	24.252 -27.953
611	24.213 -24.803	24.213 -25.433	24.213 -26.063	24.213 -26.693	24.213 -27.283	24.213 -27.913
613	24.173 -24.764	24.173 -25.394	24.173 -26.024	24.173 -26.654	24.173 -27.244	24.173 -27.874
615	24.094 -24.764	24.094 -25.354	24.094 -25.984	24.094 -26.614	24.094 -27.205	24.094 -27.835
617	24.055 -24.724	24.055 -25.315	24.055 -25.945	24.055 -26.575	24.055 -27.165	24.055 -27.795
619	24.016 -24.685	24.016 -25.315	24.016 -25.906	24.016 -26.535	24.016 -27.126	24.016 -27.756
622	23.976 -24.646	23.976 -25.276	23.976 -25.866	23.976 -26.496	23.976 -27.087	23.976 -27.717
624	23.937 -24.606	23.937 -25.236	23.937 -25.827	23.937 -26.457	23.937 -27.047	23.937 -27.638
626	23.898 -24.606	23.898 -25.197	23.898 -25.787	23.898 -26.417	23.898 -27.008	23.898 -27.598
628	23.819 -24.567	23.819 -25.157	23.819 -25.787	23.819 -26.378	23.819 -26.969	23.819 -27.559
631	23.780 -24.528	23.780 -25.118	23.780 -25.748	23.780 -26.339	23.780 -26.929	23.780 -27.520
633	23.740 -24.488	23.740 -25.118	23.740 -25.709	23.740 -26.299	23.740 -26.890	23.740 -27.480
635	23.701 -24.449	23.701 -25.079	23.701 -25.669	23.701 -26.260	23.701 -26.850	23.701 -27.441
637	23.661 -24.449	23.661 -25.039	23.661 -25.630	23.661 -26.220	23.661 -26.811	23.661 -27.402
639	23.622 -24.409	23.622 -25.000	23.622 -25.591	23.622 -26.181	23.622 -26.772	23.622 -27.362

Calculated C.G. position for weighed empty weight must be within limit values. Related cockpit loads are permissible Minimum Cockpit Load and Maximum Cockpit Load.

continued page 2-9

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Revision – 1 (TB 8011)

Page 2-8

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continued from page 2-8

Empty Weight (lbs)	Empty Weight C.G. Range (inches) at Maximum Cockpit Load of 242 lbs and for a Minimum Cockpit Load of:			
	220 lbs	231 lbs	242 lbs	265 lbs
540	25.906 -30.197	25.906 -30.866	25.906 -31.575	25.906 -32.913
542	25.866 -30.118	25.866 -30.827	25.866 -31.496	25.866 -32.874
545	25.787 -30.079	25.787 -30.748	25.787 -31.457	25.787 -32.795
547	25.748 -30.039	25.748 -30.709	25.748 -31.378	25.748 -32.717
549	25.669 -29.961	25.669 -30.630	25.669 -31.299	25.669 -32.638
551	25.630 -29.921	25.630 -30.591	25.630 -31.260	25.630 -32.598
553	25.551 -29.843	25.551 -30.512	25.551 -31.181	25.551 -32.520
556	25.512 -29.803	25.512 -30.472	25.512 -31.142	25.512 -32.441
558	25.472 -29.724	25.472 -30.394	25.472 -31.063	25.472 -32.402
560	25.394 -29.685	25.394 -30.354	25.394 -31.024	25.394 -32.323
562	25.354 -29.646	25.354 -30.276	25.354 -30.945	25.354 -32.244
564	25.276 -29.567	25.276 -30.236	25.276 -30.906	25.276 -32.205
567	25.236 -29.528	25.236 -30.157	25.236 -30.827	25.236 -32.126
569	25.157 -29.449	25.157 -30.118	25.157 -30.787	25.157 -32.047
571	25.118 -29.409	25.118 -30.079	25.118 -30.709	25.118 -32.008
573	25.079 -29.370	25.079 -30.000	25.079 -30.669	25.079 -31.929
575	25.000 -29.291	25.000 -29.961	25.000 -30.591	25.000 -31.890
578	24.961 -29.252	24.961 -29.882	24.961 -30.551	24.961 -31.811
580	24.921 -29.213	24.921 -29.843	24.921 -30.472	24.921 -31.772
582	24.843 -29.173	24.843 -29.803	24.843 -30.433	24.843 -31.693
584	24.803 -29.094	24.803 -29.724	24.803 -30.394	24.803 -31.614
586	24.764 -29.055	24.764 -29.685	24.764 -30.315	24.764 -31.575
589	24.685 -29.016	24.685 -29.646	24.685 -30.276	24.685 -31.496
591	24.646 -28.937	24.646 -29.567	24.646 -30.197	24.646 -31.457
593	24.606 -28.898	24.606 -29.528	24.606 -30.157	24.606 -31.378
595	24.528 -28.858	24.528 -29.488	24.528 -30.118	24.528 -31.339
597	24.488 -28.819	24.488 -29.449	24.488 -30.039	24.488 -31.299
600	24.449 -28.780	24.449 -29.370	24.449 -30.000	24.449 -31.220
602	24.409 -28.701	24.409 -29.331	24.409 -29.961	24.409 -31.181
604	24.331 -28.661	24.331 -29.291	24.331 -29.882	24.331 -31.102
606	24.291 -28.622	24.291 -29.213	24.291 -29.843	24.291 -31.063
608	24.252 -28.583	24.252 -29.173	24.252 -29.803	24.252 -30.984
611	24.213 -28.543	24.213 -29.134	24.213 -29.724	24.213 -30.945
613	24.173 -28.465	24.173 -29.094	24.173 -29.685	24.173 -30.906
615	24.094 -28.425	24.094 -29.055	24.094 -29.646	24.094 -30.827
617	24.055 -28.386	24.055 -28.976	24.055 -29.606	24.055 -30.787
619	24.016 -28.346	24.016 -28.937	24.016 -29.528	24.016 -30.709
622	23.976 -28.307	23.976 -28.898	23.976 -29.488	23.976 -30.669
624	23.937 -28.268	23.937 -28.858	23.937 -29.449	23.937 -30.630
626	23.898 -28.228	23.898 -28.819	23.898 -29.409	23.898 -30.551
628	23.819 -28.150	23.819 -28.740	23.819 -29.331	23.819 -30.512
631	23.780 -28.110	23.780 -28.701	23.780 -29.291	23.780 -30.472
633	23.740 -28.071	23.740 -28.661	23.740 -29.252	23.740 -30.433
635	23.701 -28.031	23.701 -28.622	23.701 -29.213	23.701 -30.354
637	23.661 -27.992	23.661 -28.583	23.661 -29.173	23.661 -30.315
639	23.622 -27.953	23.622 -28.543	23.622 -29.094	23.622 -30.276

Calculated C.G. position for weighed empty weight must be within limit values. Related cockpit loads are permissible Minimum Cockpit Load and Maximum Cockpit Load.

continued page 2-10

Prepared: 01.12.01	Verified: <i>Beltrapha</i>	Complies:
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continued from page 2-9

Empty Weight (lbs)	Empty Weight C.G. Range (inches) at Maximum Cockpit Load of 242 lbs and for a Minimum Cockpit Load of:		
	287 lbs	309 lbs	331 lbs
540	25.906 -34.291	25.906 -35.669	25.906 -37.008
542	25.866 -34.213	25.866 -35.591	25.866 -36.929
545	25.787 -34.134	25.787 -35.512	25.787 -36.850
547	25.748 -34.055	25.748 -35.394	25.748 -36.732
549	25.669 -33.976	25.669 -35.315	25.669 -36.654
551	25.630 -33.937	25.630 -35.236	25.630 -36.575
553	25.551 -33.858	25.551 -35.197	25.551 -36.496
556	25.512 -33.780	25.512 -35.118	25.512 -36.417
558	25.472 -33.701	25.472 -35.039	25.472 -36.339
560	25.394 -33.622	25.394 -34.961	25.394 -36.260
562	25.354 -33.583	25.354 -34.882	25.354 -36.181
564	25.276 -33.504	25.276 -34.803	25.276 -36.102
567	25.236 -33.425	25.236 -34.724	25.236 -36.024
569	25.157 -33.346	25.157 -34.646	25.157 -35.945
571	25.118 -33.307	25.118 -34.567	25.118 -35.866
573	25.079 -33.228	25.079 -34.488	25.079 -35.787
575	25.000 -33.150	25.000 -34.449	25.000 -35.709
578	24.961 -33.071	24.961 -34.370	24.961 -35.630
580	24.921 -33.031	24.921 -34.291	24.921 -35.551
582	24.843 -32.953	24.843 -34.213	24.843 -35.472
584	24.803 -32.874	24.803 -34.134	24.803 -35.394
586	24.764 -32.835	24.764 -34.094	24.764 -35.315
589	24.685 -32.756	24.685 -34.016	24.685 -35.276
591	24.646 -32.717	24.646 -33.937	24.646 -35.197
593	24.606 -32.638	24.606 -33.858	24.606 -35.118
595	24.528 -32.559	24.528 -33.819	24.528 -35.039
597	24.488 -32.520	24.488 -33.740	24.488 -34.961
600	24.449 -32.441	24.449 -33.661	24.449 -34.882
602	24.409 -32.402	24.409 -33.622	24.409 -34.843
604	24.331 -32.323	24.331 -33.543	24.331 -34.764
606	24.291 -32.283	24.291 -33.465	24.291 -34.685
608	24.252 -32.205	24.252 -33.425	24.252 -34.606
611	24.213 -32.165	24.213 -33.346	24.213 -34.567
613	24.173 -32.087	24.173 -33.307	24.173 -34.488
615	24.094 -32.047	24.094 -33.228	24.094 -34.409
617	24.055 -31.969	24.055 -33.150	24.055 -34.370
619	24.016 -31.929	24.016 -33.110	24.016 -34.291
622	23.976 -31.850	23.976 -33.031	23.976 -34.213
624	23.937 -31.811	23.937 -32.992	23.937 -34.134
626	23.898 -31.732	23.898 -32.913	23.898 -34.094
628	23.819 -31.693	23.819 -32.874	23.819 -34.016
631	23.780 -31.614	23.780 -32.795	23.780 -33.976
633	23.740 -31.575	23.740 -32.756	23.740 -33.898
635	23.701 -31.535	23.701 -32.677	23.701 -33.819
637	23.661 -31.457	23.661 -32.638	23.661 -33.780
639	23.622 -31.417	23.622 -32.559	23.622 -33.701

On this page, given values for Minimum Cockpit Load exceed permissible Maximum Cockpit Load considerably. These values are required for the use of the vertical tail fin ballast tank as a distinct warning, that it's use is limited.

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Ordinary Inspections

Daily Inspection and Pre-flight Check see Flight Manual pages 4-3 to 4-5.

Postflight Check see Flight Manual page 4-17.

Annual Inspection

1. Check wing shell, **especially in the spar region**, for:
 - (a) Cracks, scratches, pressure marks (Shell and spar caps are made from carbon fibre material. This is sensitive against impact and compression, damage is difficult to detect.)
 - (1) When suspecting damage, tap region off.
 - (b) When suspecting humidity in the structure in the region of the integral tanks (recognisable for instance by irregular lower side surface mirror finish).
 - (1) Inspect structure through water discharge openings using an endoscope and store units in dry environment according to instructions given in Flight Manual page 8-6. Irregularities will slowly disappear.
 - > If need be, contact manufacturer!
2. The aileron sandwich is pressure sensitive.

When pressure marks are present, then the sailplane may be no longer airworthy. Because of resulting possible structural problems or danger of flutter, contact manufacturer for damage classification and repair!
3. Fuselage automatic aileron connectors are equipped with deflectors to avoid incorrect rigging:

Check if rigging of the second wing is impossible with intentionally incorrect aileron deflection,
- namely in neutral position or deflected upward ?
4. Lubricate various parts according to plan, see page 3-4.
5. Protect gelcoat with car polish
(the wax film protects the gelcoat against embrittlement and cracking due to ultra violet light)
 - (a) See also Flight Manual pages 8-5, Cleaning and Care.
 - (b) If you use a polishing machine, be careful not to damage:
 - (1) registration signs
 - (2) anti collision colour markings
 - (3) gap seals
6. Check anti-friction tape at elevator leading edge under plastic strip sealing:
 - (a) Damaged anti-friction will yield damage of gelcoat at control surface very quickly.
 - (b) for installation of sealing see pages 4-3 to 4-6.
 - (c) Remove residual adhesive using lead-free petrol, see also Flight Manual page 8-5, Cleaning and Care.
7. Check air brakes:
 - (a) friction damper at outer side of air brake box for proper operation of damper rods.
 - (b) friction pads free from grease.
 - (c) Check air brakes for corrosion at bearings and for jamming/locking during retracting under load: Simultaneously apply about 25 kg <55 lbs> to the rear at each lever without twisting each member and retract. If need be, get bearings exchanged according to available repair instruction.

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Revision - 0

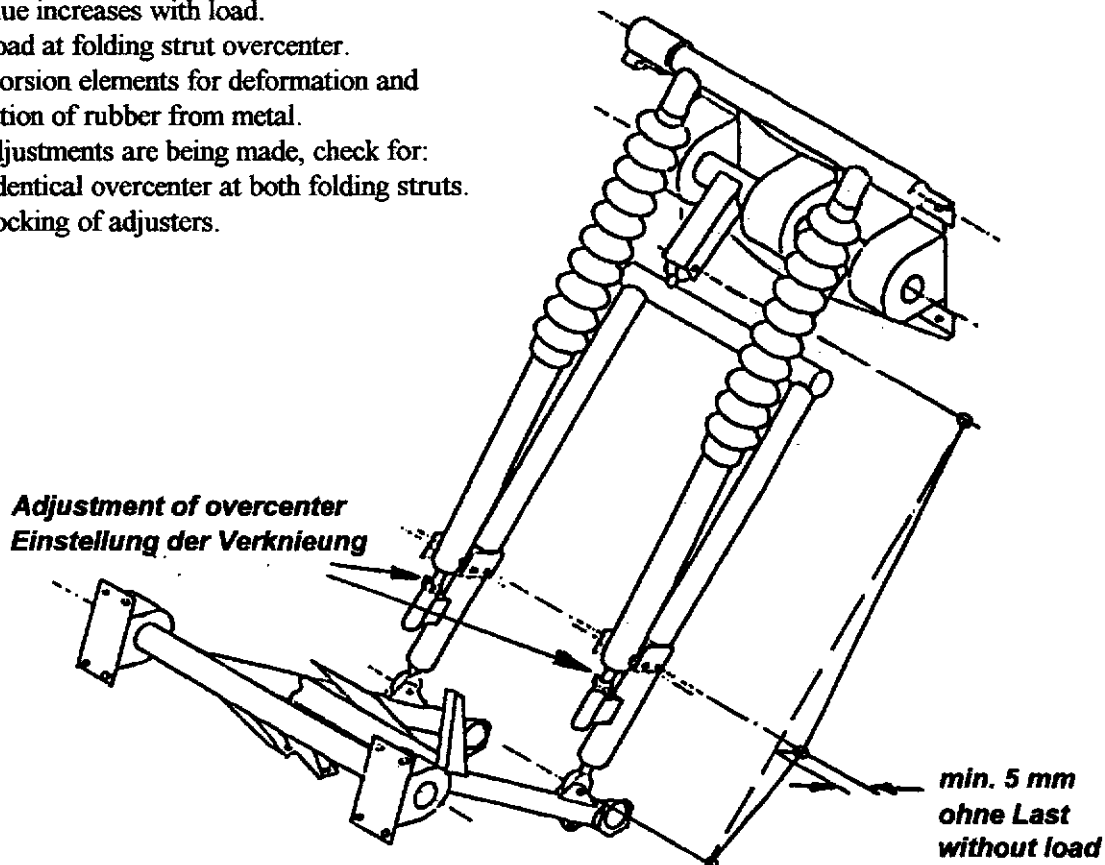
Page 3-1

Erstellt: 14.10.99 <i>Heucke</i>	Geprüft: <i>Whapla</i>	Complies:
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Ordinary Inspections continued**Annual Inspection** continued

8. Check landing gear for:

- (a) overcenter of folding strut:
 - (1) adjustable overcenter should be 5 mm <0.2 in>, gear without load.
 - (2) value increases with load.
- (b) preset load at folding strut overcenter.
- (c) rubber torsion elements for deformation and separation of rubber from metal.
- (d) when adjustments are being made, check for:
 - (1) identical overcenter at both folding struts.
 - (2) locking of adjusters.



9. Perform Annual Inspection according to checklist, chapter 14.

The annual inspection checklist contains items (aileron lateral bearing play, aileron vent holes), which may only be checked after removing seals. Unless changes are suspected (for instance lateral control surface gaps differing from design values, see also page 4-1), it is illogical to remove (destroy) seals just for inspection purpose. Existence of washer at fixed bearings can be checked after lifting sealing lids cautiously.

10. Check the following items of the water ballast system:

- (a) Wing and vertical tail fin water tanks for external tightness.
- (b) Wing tanks and 12 Litre tail fin tank for leaks into structure (irregular surface mirror finish visible).
- (c) Ventilation and drain tubes for free passage by blowing through:
For details see page 4-7, item (1).
- (d) Existence of tail fin tank filling markings under translucent rudder sealing.
- (e) Wire meshing in filling funnel is mandatory to establish proper function of vertical tail fin valve. Tail tank leaks must be repaired (the slide-in tank may be removed for repair). The vertical tail filling tube adapter is **Minimum equipment**.
- (f) Maximum tail fin tank discharge time.

Erstellt: 14.10.99 <i>Gruke</i>	Geprüft: <i>Wagner</i>	Complies:
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Ordinary Inspections continued

Annual Inspection continued

11. Check thermometer zero indication using water with ice-water mixture at the temperature pick-up.

12. Check **canopy locking and emergency release function**:

Measure force required to open canopy emergency release according to following steps (If this measurement or an operational check is performed without a helper, the spring at the rear end temporary hinge bolt becomes deformed and must be exchanged):

- (a) "pilot" in seat with spring gauge.
- (b) both canopy locking levers opened.
- (c) Helper at front canopy end to avoid lifting of canopy by gas spring.
- (d) Force required to open right side emergency release max. 15 kg <33 lbs>.
- (d) After force measurement, the pilot pushes the rear end temporary hinge bolt free and lifts the canopy at opening levers, the helper holds the front end on the opener.
- (e) With canopy fully open, the helper pushes the connecting pin upward and engages canopy to opener by turning driving lug anti-clockwise.
- (f) When emergency release force is too high, grease all moving parts, contact manufacturer if necessary.

13. Inspect **function of LS-latch at emergency canopy release**

Measure force required to lift canopy rear edge free from spring:

Reference value 8 to 15 kg <18 to 33 lbs>

If force required is considerably lower, the spring must be exchanged to ensure proper functioning of canopy jettison.

14. When equipment has been altered compared to valid equipment list, file new equipment list and redetermine C.G. (see chapter 2). With equipment unaltered, C.G. should be redetermined every four years. Appropriate forms see chapter 14.

3.2 Extraordinary Inspections

Extraordinary inspections should be performed depending on circumstances (rough landings, ground loops etc.)

- (a) Landing gear functioning, attachment and drive
- (b) Landing gear box for damage, rubber torsion springing elements for deformation
- (c) Tail skid bonding or tail wheel attachment, function and tyre pressure
- (d) Wings, fuselage and tail unit for damage (cracks, buckling, compression)
- (e) Tangential tubes across fuselage for straightness
- (f) Control system function, free movement and deflections

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Revision - 0

Page 3-3

Erstellt: 05.10.99 <i>Yewick</i>	Geprüft: <i>Whapka</i>	Complies:
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Lubrication Schedule

Location	Frequency	Lubricant
Main pins and matching bushes Pins and matching bushes of (1) wing fuselage connection (2) elevator connection (2) winglet connection Wingside bearings of automatic aileron and air brake system connectors, which are inserted into fuselage couplings	Before assembly	Water insoluble bearing grease or grease containing molybdenum, for instance: Molykote BR2 (Temperature range from -30° to 130° C <-22° F to 266° F>)
Landing gear: all joints (also at forward rubber bearings)	Once a year	Oil Note: protect rubber parts against oil.
Bearings at control surfaces	After disassembly only	Molykote grease BR2 (-30° C to 130°C <-22° F to 266° F >) or Molykote grease 33 (-70° C to 180°C <-94° F to 356° F>)

Important Note: Never grease longitudinal motion pushrod bearings. They will soon be destroyed due collection of foreign matter. These bearings are used in elevator system, aileron system, air brake system and landing gear drive.

Warning: The friction dampers inside the air brake boxes prevent oscillations during extension of air brakes. Therefore, friction pads should never be greased or oiled !

Tow Hooks: See Maintenance Instructions of manufacturer (TOST)

Multiple point buckle MS-17/B of FAG-12 safety harness: see Maintenance Instructions of manufacturer (Autoflug) <Excerpt see in Appendix, when fitted>

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Page 3-4

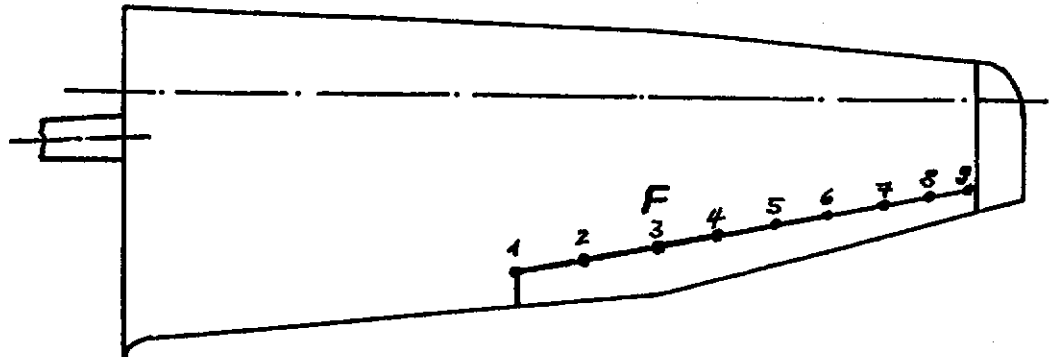
Erstellt: 05.10.99 <i>Heurke</i>	Gepüft: <i>Whapka</i>	Complies:
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For Installation Instructions of wings and horizontal tail see Flight Manual pages 4-1 to 4-2.

Installation of Control Surfaces

Wing scheme with aileron bearings

F = laterally fixed bearing

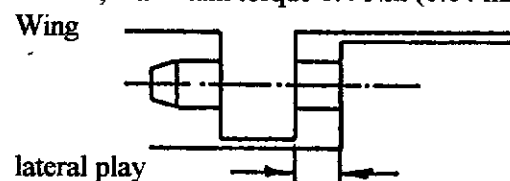


Disassembly of Ailerons

- (1) Remove winglet.
- (2) Remove inner sealing tapes (Teflon tape) completely, upper and lower side.
- (3) Lift bonded-on drive covers cautiously using knife.
- (4) Disconnect drive rods from aileron (6 mm thread, nut M6 LN 9348, width over flats 10mm), remember sequence and position of washers, if applicable.
- (5) Loosen nut (6 mm thread, M6 LN 9348, width over flats 10 mm) from bearing No. 3 (fixed bearing), remember sequence and position of washers.
- (6) Deflect aileron fully downward and remove from bearings towards wingtip. Use 2 persons to avoid damage due to low bending stiffness !
- (7) Watch washers, if existent, at inner side of bearing pin of fixed bearing No. 3.

Assembly of Ailerons

- (1) Install inner sealing tapes on wing according to instructions page 4-3 and 4-4, fix free end on wing outside provisionally using tape.
- (2) Grease bearings according to lubrication schedule, see page 3-4.
- (3) Make sure that washers, if existent, are on inner side of fixed bearing pin, bearing No. 3.
- (4) Align aileron bearing pins with bearings, keep aileron fully deflected downward and push from outside towards wing root.
- (5) Use 2 persons, do not use force !
- (6) set up washers at bearing No. 3 as found during disassembly.
- (7) Tighten nut (6 mm thread, M6 LN 9348, width over flats 10m m, maximum torque 6.4 Nm (0.64 mkg, 4.623 ft lbs).
- (8) Check lateral bearing play:
minimum of 3 mm <0.12 in>



- (9) Check lateral aileron gaps:
15 m winglet fitted, aileron outer edge - minimum 2 mm <0.08 in>
aileron inner edge - minimum 1 mm <0.04 in>
- (10) Fix drive rods to aileron drive bracket using bolt (LN 9037), nut (6mm thread M6, LN 9348, width over flats 10 mm) and washers, maximum torque 6.4 Nm (0.64 mkg, 4.623 ft lbs).
- (11) Bond drive covers using polyester filler.
- (12) Bond internal gap seals (38 mm <1.5 in> wide Teflon tape) at appropriate full aileron deflection, see page 4-4 for details.

Installation of Control Surfaces continued

Disassembly of Elevator

- (1) Remove bearings and washers at elevator drive , remember sequence and position of washers (Width over flats 10 mm).
- (2) Remove elevator halves towards centre.
- (3) Watch washers, if existent, at inner side of both inner bearing pins.

Assembly of Elevator

- (1) Grease bearings according to lubrication schedule, see page 3-4.
- (2) Make sure that washers, if existent, are on inner side of fixed bearing pins.
- (3) Match elevator pins of halves with bearings, do not use force !
- (4) With inner bearings just touching shoulders, check outer end lateral gaps for minimum 1 mm <0.04 in>.
- (5) Install both drive bearings with washers (0.1 mm <0.004 in> shim between both bearings), screw halves together (6 mm thread M6, LN 9348, width over flats 10 mm), maximum torque 6.4 Nm (0.64 mkg, 4.623 ft in).

Do not brace elevator halves against inner bearings, maximum axial play 0.5 mm <0.02 in>.

- (6) If need be, install new plastic strip gap seals, see also pages 4-3 and 4-5.

Disassembly of Rudder

- (1) Disconnect rudder cables.

Attention: Don't loose spacing casings.

Attention: Rudder cables may be twisted. If this is changed unintentionally, neutral positions of rudder and pedals do no longer correspond and must be realigned as detailed below.

- (2) Loosen nut at lower bearing (6 mm thread, M6 LN 9348, width over flats 10 mm) using a socket wrench, remember sequence and position of washers.
- (3) Lift rudder upward from bearings.

Assembly of Rudder

- (1) Grease bearings according to lubrication schedule, see page 3-4.
- (2) Existing and damaged V-type sealing tape must be removed. (This type of seal is not longer available).
- (3) Lower rudder into bearings, do not use force !
- (4) Check radial play of upper bearing: maximum permissible radial play 0.5 mm <0.02 in>. If necessary renew brass bushing. Make sure, that non-concentric position of bearing keeps relative position to direction of flight. Bond bushing with for instance Loctite 72 b (672).
- (5) Connect rudder cables provisionally, do not forget to insert spacing casings into thimbles.
- (6) Check pedal-rudder alignment: With pedals in neutral position and rudder deflected to one side, twist **opposite** cable **clockwise (maximum 5 turns)** until properly aligned.
Should more than 5 turns be necessary for alignment, exchange cables. **Never** turn cables **counter clockwise** !
- (7) Place washers on cable connection bolts and tighten nuts M6 LN 9348, width over flats 10 mm, with maximum torque 6.4 Nm (0.64 mkg, 4.623 ft lbs).
- (8) Set up washers at lower bearing as found during disassembly (normally: recessed washer first, then large washer). Tighten nut (6 mm thread, LN 9348, width over flats 10 mm) with maximum torque 6.4 Nm, (0.64 mkg, 4.623 ft lbs). After assembly the rudder should have slight axial play, maximum axial play is 1 mm (0.04 in).
- (9) If necessary, restore gap seals (convex plastic strip), see pages 4-3 and 4-5 for details.

Erstellt: 12.10.99 <i>Geuck</i>	Geprüft: <i>Wagner</i>	Complies:
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Installation of Gap Sealing

- (1) Place wing vertically on padded supports with leading edge downward and secure at spar tongue or fork against falling down.
- (2) Cut Teflon tape to ample aileron length and cover one edge with 4965 adhesive strip (9 mm wide) without pretension to avoid warping.
- (3) Clean bonding region on wing after aileron disassembly from adhesive residues and paint with primer (Pattex).
- (4) After approximately half an hour of drying, place inner Teflon sealing tapes to wing according to page 4-4 such, that about 2 mm (0.08 in) at the edge are not covered. Remove masking from sealing tape during bonding process.
- (5) Place aileron into bearings provisionally, deflect fully and mark rear wing edge position on aileron using a pencil for both deflections.
- (6) Bond adhesive strip to aileron such, that it's leading edge is at least 5 mm (0.197 in) in front of marking. Also at bearing cut-outs a minimum of 5 mm (0.197 in) must remain.
- (7) Install aileron completely, see page 4-1. Remove masking tape from aileron bonding strip and press Teflon tape on without undue pulling or warp. Cut surplus Teflon tape along wing rear edge marking (or edge 5mm behind bearing cut-out), but avoid cutting into gelcoat.

Installation of Elevator Sealing

- (1) Apply 2 layers of Tesa film 4104 to upper leading edge of elevator, according to page 4-5.
- (2) Bond plastic sealing tape after removing masking tape to elevator upper side. Protect leading edge of sealing tape with Tesa film 4104 against warping. See drawings on page 4-4.

Always tighten plastic sealing tape during bonding with 2 persons.

- (3) Bond plastic sealing tape after removing masking tape to elevator under side as given on page 4-5. Thereafter bond 3-D-Zigzag tape flush to leading edge of sealing tape.

Edition: April 1999

Revision - 0

Page 4-3

Erstellt: 05.10.99 <i>Heuck</i>	Gepüft: <i>Whepler</i>	Complies:
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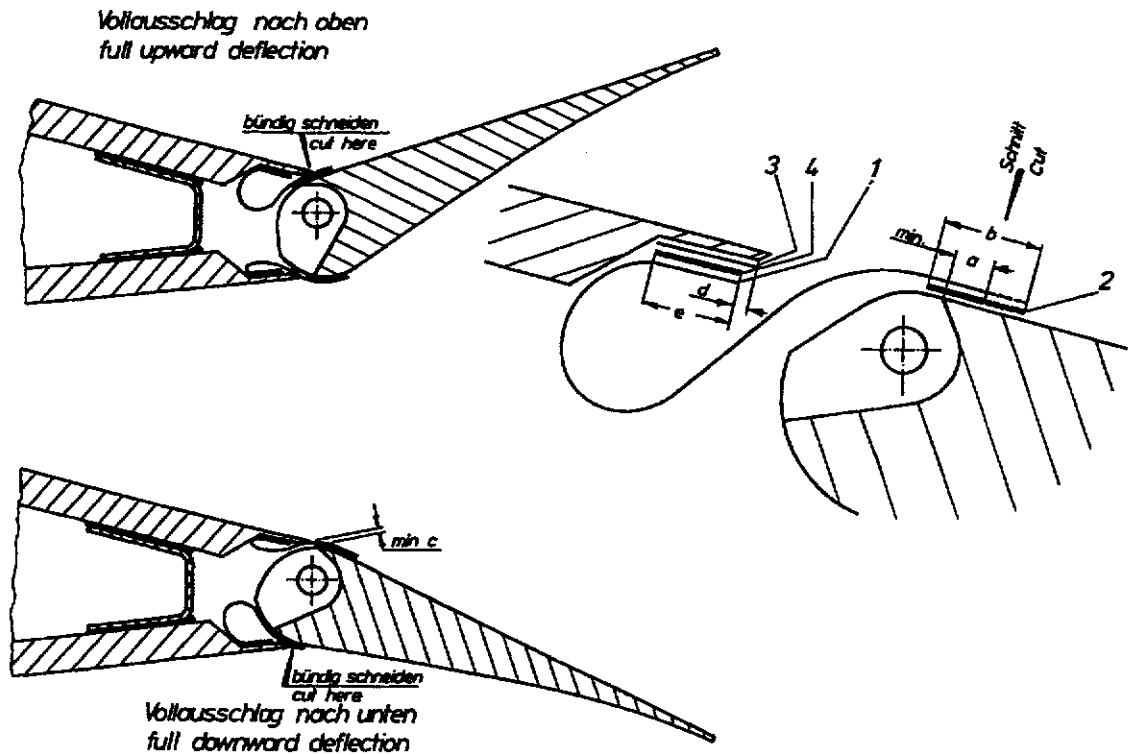
Installation of Gap Sealing continued

Aileron

Material:

No.	Denomination	Amount required
1	Teflon-Glass tape 0.08*38	15.2 m <49.9 ft>
2	Bonding film Tesafix 4965 translucent 12 mm	15.2 m <49.9 ft>
3	Primer (Pattex)	
4	Bonding film Tesafix 4965 translucent 9 mm	15.2 m <49.9 ft>

Measurements: a = 5 mm <0.197 in>
 b = 12 mm <0.472 in>
 c = minimum 1 mm <0.039 in>
 d = 2 mm <0.079 in>
 e = 9 mm <0.354 in>



Edition: April 1999

Revision - 0

Page 4-4

Erstellt: 06.10.99 <i>Leucke</i>	Geprüft: <i>Wrayha</i>	Complies:
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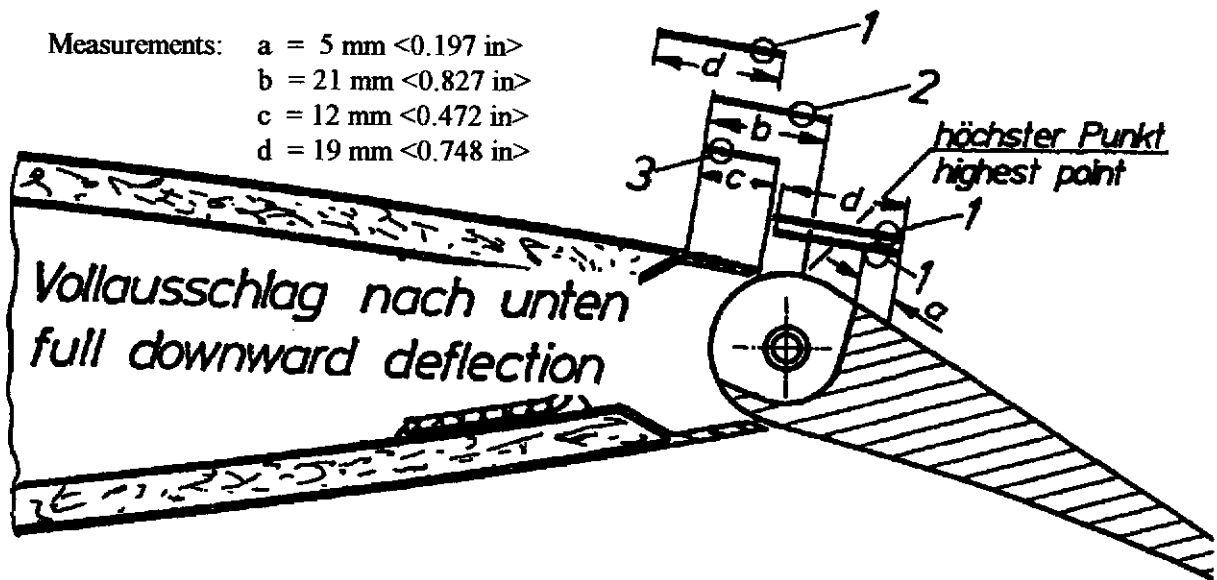
Installation of Gap Sealing continued

Elevator

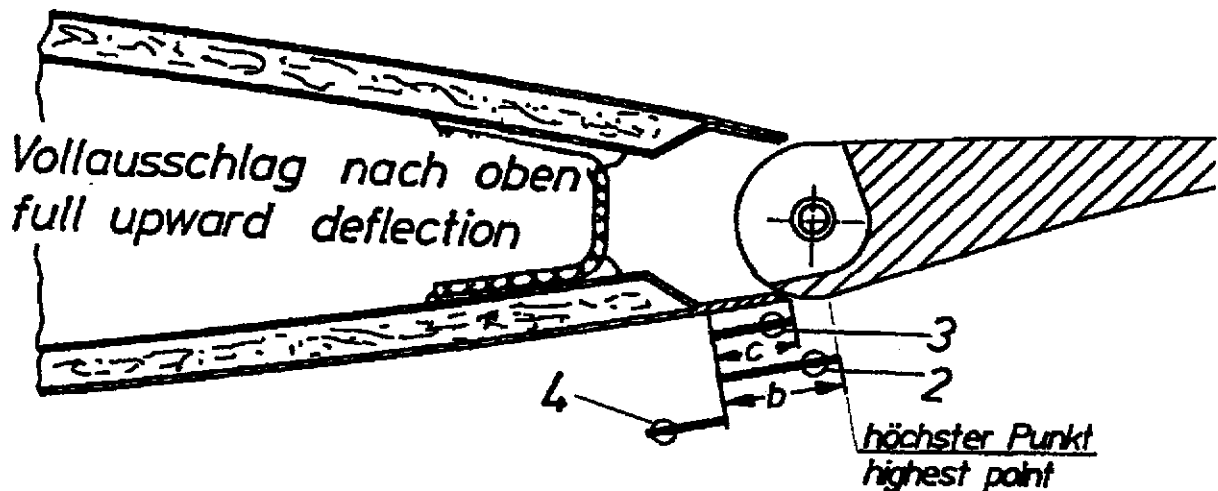
Material:

No.	Denomination	Amount required
1	Tesafilm 4104 white 19mm	7.0 m <23 ft>
2	Plastic seal 0.25 21 mm	4.6 m <15.1 ft>
3	Bonding film Tesafix 4965 translucent 12 mm	2.3 m <7.5 ft>
4	3-D Zigzag tape 0.9 mm, 90	2.3 m <7.5 ft>
	Plastic seal 0.25 Form 2, 30 mm, convex (for centre portion between elevator halves)	0.1 m <4 in>

Measurements: a = 5 mm <0.197 in>
 b = 21 mm <0.827 in>
 c = 12 mm <0.472 in>
 d = 19 mm <0.748 in>



Tape 2 rear edge should end on highest point of elevator leading edge.

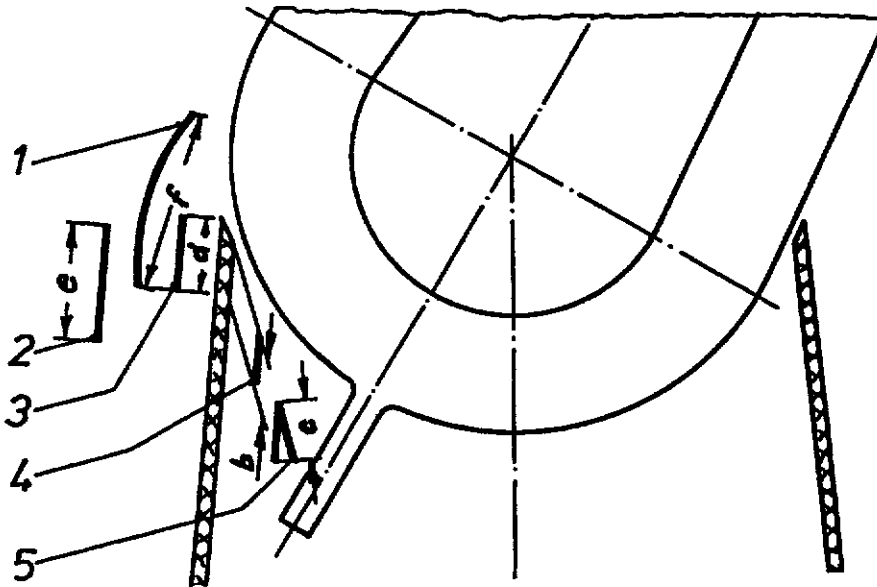


Installation of Gap Sealing continued

Rudder

Materia:

No.	Denomination	Amount required
1	Plastic seal 0.25 Form 2, 30 mm, convex	2.3 m <7.55 ft>
2	Tesafilm 4104 white 19 mm	2.3 m <7.55 ft>
3	Bonding film Tesafix 4965 translucent 12 mm	2.3 m <7.55 ft>
4	Bonding film Tesafix 4965 translucent 9 mm	2.3 m <7.55 ft>
5	Tesa V-Type sliding seal(see also remark page 4-2).	2.3 m <7.55 ft>



Measurements [mm, <in>]

- b = 9 <0.354>
- c = 10 <0.394>
- d = 12 <0.472>
- e = 19 <0.748>
- F = 30 <1.181>

Seat Disassembly

- (1) remove 8 bolts (8 mm thread) hexagon recess No. 5, watch for length and position of bolts, colour mark short ones !
- (2) Disconnect backrest base from seat, remove backrest.
- (3) Remove 5 countersunk screws each (Philips recess) at left side along air brake lever guide and at right side at landing gear lever guide. Remove T-shaped handle from pedal adjuster cable (5 mm thread, nut LN 9348, width over flats 8 mm). Use pliers at pressed-on end fitting to avoid cable twisting.
- (4) Loosen control stick opening cover, place air brake lever into forward position.
- (5) Swivel left side of seat upward. Direct left lap belt fixing at seat around longitudinal motion pushrod guide by pulling inward at belt. Take seat out to upper left.

Seat Assembly

- (1) Inspect under seat region for foreign matter, tools etc.
- (2) Rest right seat side on support and direct control stick into cut-out.
- (3) Direct pedal adjuster cable into guide, place air brake handle into forward position.
- (4) when lowering seat, direct release handle around seat edge and watch especially for left lap belt fixing, this should never be forced over the seat support and elevator pushrod guide.
- (5) If seat fixing bolts are different in length, the short one must be fitted behind trim indicator to avoid chafing at trim system or trim misfunction.
- (6) Fix countersunk screws along left side air brake guide and right side gear handle guide.
- (7) Insert remaining 8 mm thread bolts with hexagon recess No. 5, watch bolt length and positions as noted before.
- (8) Screw T-shaped handle to pedal adjuster cable; use pliers to prevent rotation of cable end fitting.
- (9) Check control system after installation for proper operation.

Erstellt: 06.10.99 <i>Heuck</i>	Geprüft: <i>Whapha</i>	Complies:
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Adjustment of Water Ballast System

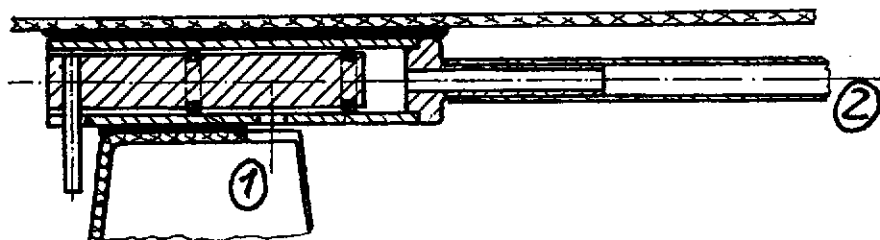
- (1) Before adjusting wing system, check ventilation tubes No. 2 and 4 (see drawings pages 1-8 to 1-10) and draining tube No. 5 free from clogging.
 - a) Cleaning of tubes 2 and 4 possible from winglet intersection for winglet ventilation or from root rib after removing two plugs for root rib ventilation.
 - b) Cleaning of tube 5 after removing drain valve at root rib (See drawing below).
- (2) For adjustment of wing system (see drawings page 4-8), after disassembly of baggage compartment cover, remove tail fin tank drive >1< from right wing drive lever (**not applicable for integral tail tank**), (Lift ball joint from ball against preload of securing ring) and extend cable with nylon cord to avoid disappearing into fuselage.
- (3) Check cockpit operating toggle lever for overcenter in open position.
- (4) Adjusters at >2< and >3< are used for adjustment of bowden cable synchronisation and simultaneous opening.
- (5) Inspect opening moment of outer wing valve: with root rib lever distance >b< = 5 mm <0.2 in> from edge, the valve starts opening. See sketch page 4-8 at >b< (**not applicable for integral tail tank**).
- (6) Inspect maximum opening of outer valve: with inner valve still closed, opening travel of outer valve should be between 11 and 15 mm <0.43 to 0.6 in>. See also drawing at >c<. Possible adjustment at >5< (**not applicable for integral tail tank**).
- (7) Inspect maximum opening of inner valve: opening travel of inner valve should be between 16 and 20 mm <0.63 to 0.79 in>. See drawing at >d<, method of measurement as indicated under >c<. Possible adjustment at >6<.
- (8) Both wings must be adjusted symmetrically.
- (9) Play between fuselage and wing drive levers at >a< should be between 0 and maximum 2 mm <0 to 0.08 in>, measure from baggage compartment.
- (10) After checking wing water ballast system adjustments, re-install vertical tail tank drive at right side drive lever in baggage compartment. Securing ring in ball joint coupling must snap over ball. (**not applicable for integral tail tank**).
- (11) Check vertical tail fin tank opening after filling some water:

Slide-in tail tank	- Opening simultaneously with or before inner wing tank.
Integral tail tank	- Opening simultaneously with or before one of the wing tanks.

For possibly required tail fin tank removal see page 4-9.
Tail fin tank adjustment possible at >4< after wing system adjustment or inspection.
- (12) Do not forget to lock and colour mark all nuts after adjustments.

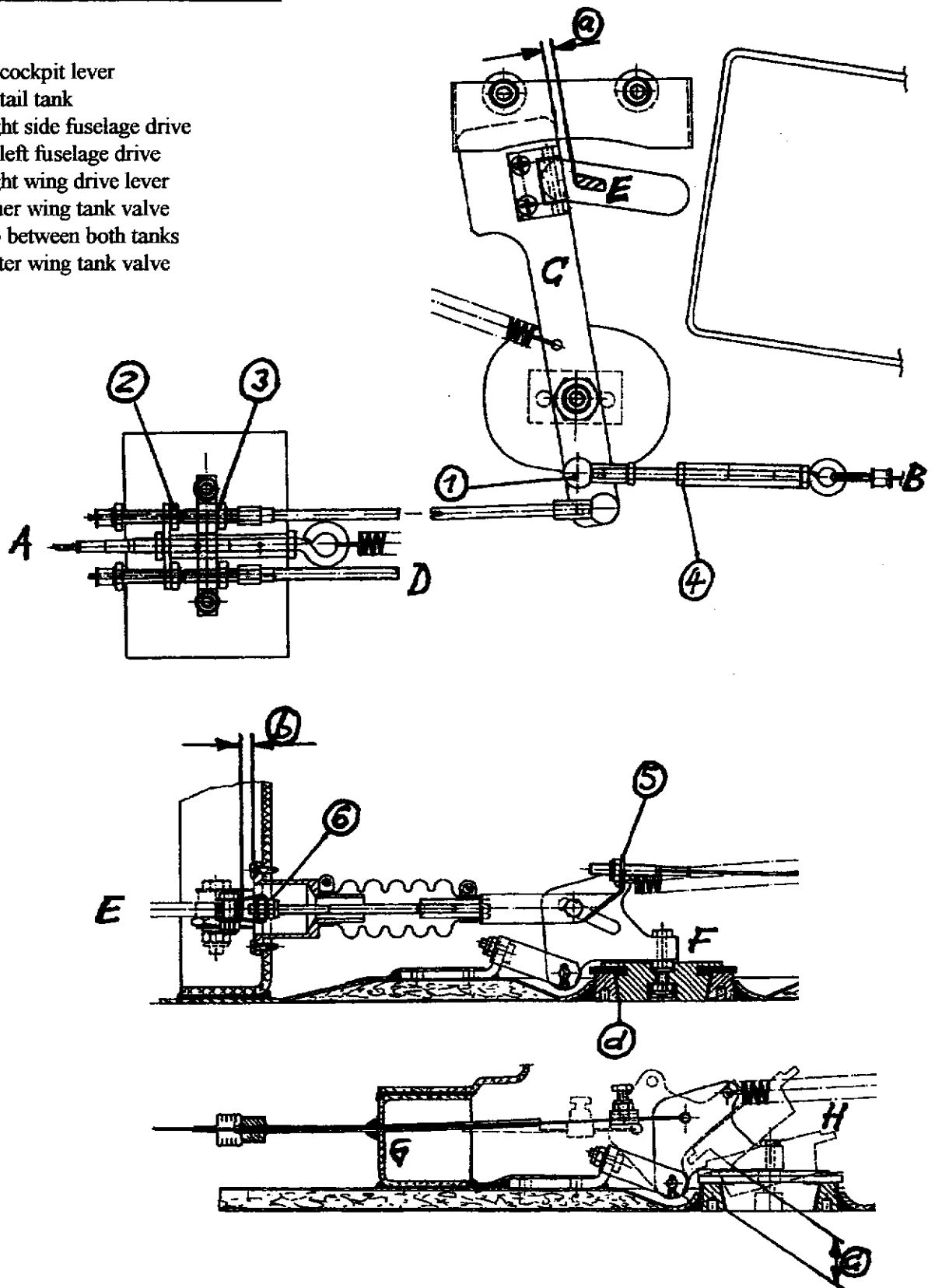
Root rib drain valve

- (1) - Opening for inner tank
- (2) - Tube from outer tank



Adjustment of Water Ballast System continued

- A - to cockpit lever
- B - to tail tank
- C - right side fuselage drive
- D - to left fuselage drive
- E - right wing drive lever
- F - inner wing tank valve
- G - rib between both tanks
- H - outer wing tank valve



Erstellt: 06.10.99 <i>Genck</i>	Geprüft: <i>Wapka</i>	Complies:
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Water Ballast System continued

Tail Fin Slide-in Tank, 3.8 to 5.5 Litres (not applicable for integral tank 12 Litres)

Disassembly

- (1) Disconnect operating cable from right drive lever at position >1<, see drawing on page 4-8, and extend with approx. 6 m <20 ft> of thin nylon cord.
- (2) Loosen clamp (or cut open bonding) holding discharge tube at right lower rudder cut-out. Push stiff tube of approx. 7 to 8 mm <0.28 to 0.32 in> outside diameter and 1.5 m <5 ft> length into discharge tube.
- (3) Dismount 2 bolts holding upper tank end at rib (8 mm thread, LN 9037, width over flats 13 mm).
- (4) Cut silicon rubber sealing along upper edge cautiously with sharp knife.
- (5) Pull tank upward, at the same time push auxiliary tube from lower end accordingly.

Assembly

- (1) Before installation, check valve tightness using water; check also tightness with valve fully open, but discharge tube held closed. Total valve travel between 7 and 9 mm <0.28 to 0.35 in>. (In fully open position spring coils are solid).
- (2) Push discharge tube onto auxiliary tube, cover joint with tape to avoid edge catching at ribs or webs.
- (3) Connect drive cable with auxiliary cord.
- (4) Insert tank into vertical tail fin upper end, simultaneously pull with caution at auxiliary tube from lower end and at cord from cockpit.
- (5) Valve must be inserted into cut-out in lower tail fin rib, use caution to avoid valve damage.
- (6) Seal upper tank edge with silicon rubber to surrounding structure.
- (7) Mount 2 bolts holding upper tank end (and horizontal tail bracket), 8 mm thread, LN 9037, width over flats 13 mm. When tank is combined with battery box, these bolts also hold the hinged battery box cover.
- (8) Clamp end of discharge tube (or fix by bonding) in right lower rudder cut-out.
- (9) Adjust valve operation as outlined on page 4-7.

Check operation:

- a) Watertight with valve closed.
- b) Opening simultaneously or before outer wing valves.
- c) Tightness during filling (back to front via funnel). With valve open, water level in filling tube must remain constant.

C.G. Hook System Disassembly and Assembly

Tools: 3/4" drive ratchet, 8 and 10 mm sockets, 8 and 10 mm ring- or open end spanners.

General hint: Note length of bolts and positioning of washers for all assembly positions.

Keep fixing bolts with plane during hook overhaul.

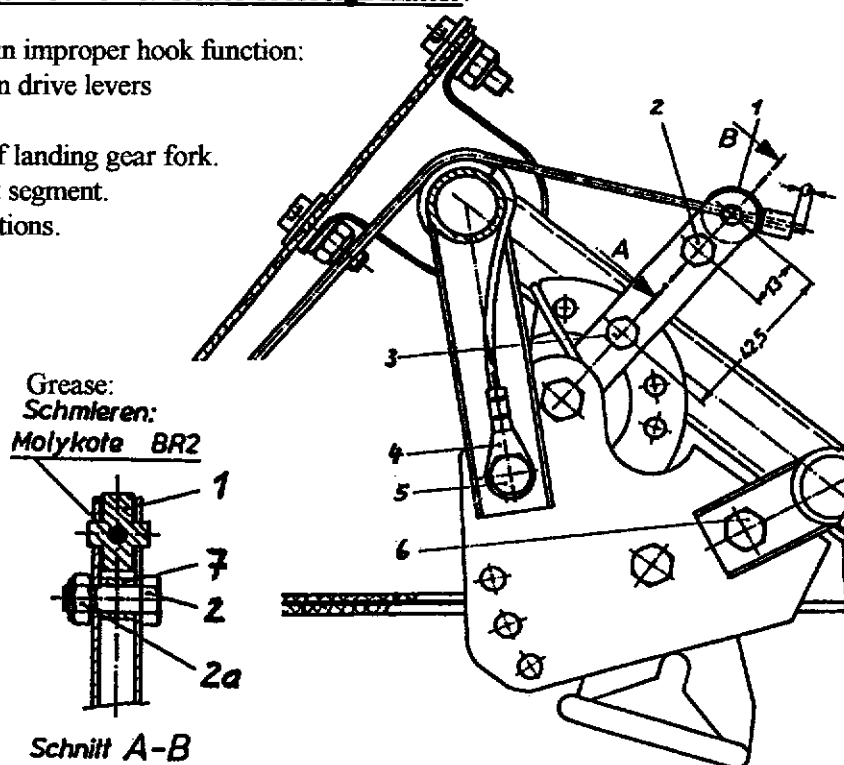
- (1) Take canopy off from fuselage according to Flight Manual page 4-4 with a helper after pulling emergency canopy release.
- (2) Disassemble seat according to page 4-6.
- (3) Under seat, disconnect C.G. release cable from pulley, watch for spacer.
- (4) Disassemble C.G. hook from brackets at landing gear fork.
- (5) Pull hook downward.
- (6) Open screwed joints ≥ 2 below cable and ≥ 3 at lower end of drive lever for about 4 mm < 0.16 in $>$, expand lever arms and remove cable end ≥ 1 .

Assembly of C.G. hook in reverse order, watch out especially for the following:

- (1) Exchange cable, when wear is considerable in the region of position (2), see also chapter 13 and in FAA "Aircraft Inspection and Repair" Manual.
- (2) Cable must be routed over cross member of landing gear fork.
- (3) For position of drive lever at circular segment and fixing bores see sketch below.
- (4) Bushing ≥ 7 between lever arms and below cable end avoids clamping of connector.
- (5) Grease cable connector ≥ 1 , set into bores at drive lever end and tighten at ≥ 2 and ≥ 3 .
- (6) Connect earth cable from controlstick ≥ 4 together with forward fixing bolt ≥ 5 .
- (7) Connect cable to pulley under seat (spacer!) and check function of C.G. hook.
- (8) For proper overcenter of hook system, 5 mm < 0.2 in $>$ of free cable travel must be available at cockpit T-shaped handle.
- (9) Before installation of seat, check for non-existence of foreign matter.

Warning: The following items result in improper hook function:

- (a) Missing bushing ≥ 7 between drive levers below cable connector ≥ 1 .
- (b) Cable below cross member of landing gear fork.
- (c) Wrong drive lever position at segment.
- (d) Use of other hook fixing positions.



Nose Hook System Disassembly and Assembly

Tools: 3/4" drive ratchet, 8 and 10 mm sockets, 3 and 4 mm hex head driver sockets, 10 mm ring spanner, 12 mm open end spanner.

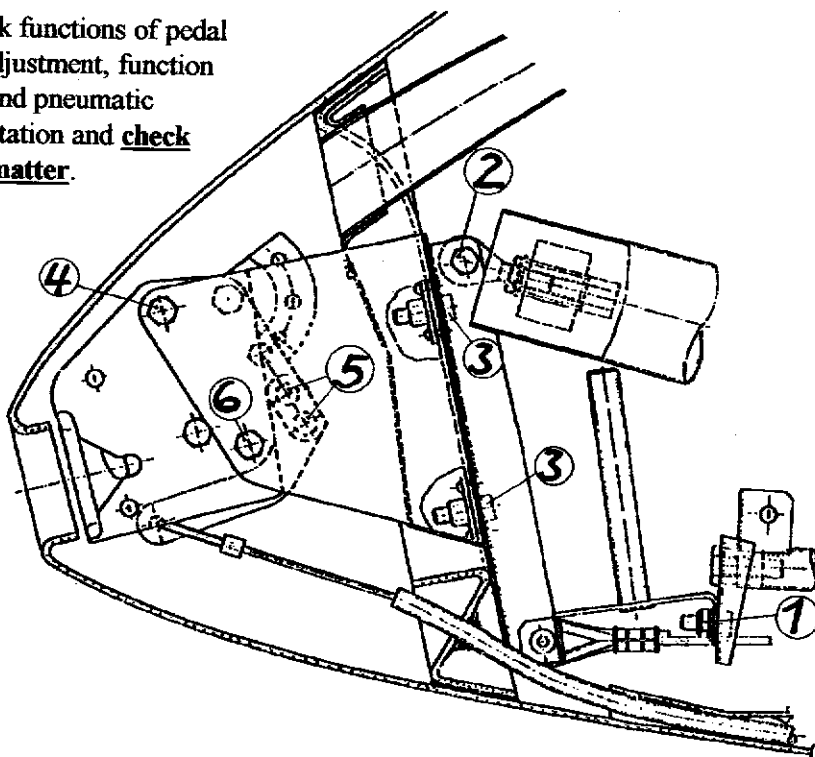
General: Note length of bolts and positioning of washers for all assembly positions.

Keep fixing bolts, 5 spacers and lever extension with plane during hook overhaul.

- (1) Take canopy off from fuselage according to Flight Manual page 4-4 with a helper after pulling emergency canopy release.
- (2) Disassemble seat according to page 4-6.
- (3) Under seat, disconnect C.G. release cable from pulley, watch for spacer.
- (4) Pull pedals to rearmost position.
- (5) Disconnect trim weight holder from pedal guide at >1<.
- (6) Disconnect 2 bolts >2< at front end of canopy support from bracket, move support as far back into cockpit as possible, if need be disconnect gas strut at one end as well.
- (7) Disconnect both canopy support brackets including trim weight holder from nose bulkhead at >3< and move backward too.
- (8) Pull nose hook together with bracket backward from bulkhead.
- (9) Disassemble nose hook from bracket at >4<, watch for 4 spacers between nose hook body and bracket and for 1 spacer inside nose hook body at position >6<.
- (10) Disassemble drive extension with cable from drive lever at >5<.

Assembly of nose hook in reverse order, watch out especially for the following:

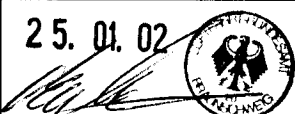
- (1) Insert spacer at position >6< inside hook body before assembly of lever extension.
- (2) When assembling nose hook into bracket, guide spacers into position using 12 mm open end spanner.
- (3) After assembly at >3< and connecting C.G. hook cable at pulley (spacer!) – check proper function of both hooks.
- (4) For proper overcenter of hook system, 5 mm <0.2 in> of free cable travel must be available at cockpit T-shaped handle.
- (5) Before installation of seat, check functions of pedal system and locking of pedal adjustment, function of canopy support, electrical and pneumatic installations of total instrumentation and check for non-existence of foreign matter.



Airworthiness Limitations Section

This Airworthiness Limitations Section is LBA-approved.
LBA-approved:



Log of Revisions for Airworthiness Limitations Section

No.	Pages affected	Description	LBA-Approval Signature / Date
1	5-1, 5-2	C.G. and nose hook time limitation abolished by manufacturer. (TB 8011)	25. 01. 02 

Edition: Dec. 2001

Revision – 1 (TB 8011)

Page 5-1

Prepared: 01.12.01 	Verified: 	Complies:
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Airworthiness Limitations

- | | | | |
|-------------------|---------------------------------------|---|---|
| 1. C.G. hook | TOST
or TOST
or TOST | Europa G 73:
Europa G 72
Europa G 88 | 2000 take offs)* |
| 2. Nose hook | TOST
or TOST | E 75 or E 72:
E 85 | 2000 take offs)* |
| 3. Safety harness | Autoflug
FAG-12D
FAG-12H | lap belt with multiple point buckle MS-17/B
shoulder strap | Webbing life limit 12 years from
manufacturing date)* |
| Safety harness | Gadringer
Bagu 5402
Schugu 2700 | lap belt with multiple point buckle
shoulder strap | Webbing life limit 12 years from
manufacturing date)* |
| Safety harness | Schroth Type 4-01-1A52xx | with multiple point buckle
Lap belt and shoulder strap | Webbing life limit 12 years from
manufacturing date)* |
- (Not entered digits xx nominate webbing colour:
Standard colours: 06 dark blue; 91 blue, 66 red, 14 grey)
4. Sailplane structural life limit:: **3000 hours** total flying time
The life limit may be increased according to
the procedure outlined on page 5-3 stepwise up to
12000 hours total flying time.

)* See also Maintenance- and Operating Instructions of manufacturers.

Note: Repair damage prior to next flight.

When in doubt, weather a "small repair" or a "major repair" is necessary, contact the manufacturer.

"Major repairs" must be accomplished in accordance with Rolladen-Schneider repair methods at national authorities-certified repair stations rated for composite aircraft structure work, at FAA Certificated Repair Stations, or by other qualified persons authorised to perform maintenance on composite structures.

Certain "major repairs" may only performed by the manufacturer due to necessary jigs. This has to be checked with the manufacturer for the case in question.

Inspection Sequence to Increase Service Life

1. General

Results of supplementary serviceability tests at main spar booms for wings proved, that service life of FRP sailplanes may be increased to 12.000 hours if airworthiness of each single sailplane (in addition to annual inspections) is checked according to a special multi-step inspection programme.

2. Schedule

When the sailplane has reached 3000 hours service life an inspection according to the programme mentioned under 3. Must be carried out. If the result of the inspection is positive or found defects repaired properly, the service life of this sailplane will be increased by 3000 hours to 6000 hours (1. Step).

The inspection routine should be repeated when reaching 6000 hours. With a positive result or found defects repaired properly, service life will be increased by another 3000 hours to 9000 hours (2. Step).

The inspection routine should be repeated when reaching 9000 hours. With a positive result or found defects repaired properly, service life will be increased by 1000 hours each to 10000 hours (3. Step), 11000 hours (4. Step) and 12000 hours (5. Step).

3. The valid **Inspection Programme** should be requested from the manufacturer stating serial number and service time.
4. Inspections should be carried out at the manufacturer or an adequately licenced repair shop.
5. Results of inspections must be recorded in an inspection report, commenting to each inspection step. If inspections are not carried out at the manufacturer, a copy of the report must be sent to them for analysis.
6. This inspection does not affect annual inspections.

Flight Control Travel Limits (Inspect annually)

Aileron:	Up 26° - 30° Down 13° - 15°
-----------------	--------------------------------

Elevator:	Up 28° - 30° Down 22° - 26°
------------------	--------------------------------

Rudder:	To both sides 26° - 30°
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Air Brake:	Fully extended minimum average 150 mm <5.906 in>
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For easier checking, measured angles may be converted to mm / in deflection values, using the actual local radius of the defined measuring place. See also table page 6-3 or deflections report of final production inspection.

Control Surface Weight and Mass Balance (Should be inspected when suspecting changes of mass / weight and after repairs)

Weight and mass balance must be within given limits for safety against flutter:

There are 2 aileron versions:

1. Aileron **without** mass balance
2. Aileron **with** mass balance prepared for the LS8-18

	Mass/Weight	Hinge moment	Horizontal reference line
Aileron without mass balance	2.16 to 2.86 kg 4.76 to 6.31 lbs	5.67 to 7.50 kg*cm 78.7 to 104.2 in*oz	Leading and trailing edges of under side connected
Aileron with mass balance	3.40 to 4.40 kg 7.50 to 9.70 lbs	2.04 to 3.87 kg*cm 28.3 to 53.7 in*oz	
Elevator	1.30 to 1.65 kg 2.87 to 3.64 lbs	3.48 to 4.60 48.3 to 63.9 in*oz	Straight region of upper side
100% mass balance by weight adaptation of pushrod in vertical tail fin. Total weight of elevator pushrod recorded on page 14-6.			
Rudder	4.00 to 6.00 kg 8.82 to 13.23 lbs	±1.60 kg*cm ±22.2 in*oz	Centreline

(1 cm*kg = 13.887 in*oz)

Details for measuring technique of hinge moment and repairs see page 6-2 !

Erstellt: 08.12.99 <i>Heuck</i>	Geprüft: <i>Schopka</i>	Complies:
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Control Surface Weight and Mass Balance continued

Measuring Technique for hinge moment: Control surfaces should be attached singly (also each elevator half) at two bearings without any tension or friction. Measure weight at rear edge with reference line level and local radius from hinge, multiply weight and radius to yield hinge moment.

When using identical locations for measuring as used in final production inspection (see Control Surface Inspection Form, page 14-7), then rear edge weight only must be checked.

Warning: Repairs are possible only in exceptional cases, because after changes of local static moment due to repairs, mass balance must be fixed in this region to yield identical static moment values as in the original condition. As this requirement from the flutter investigation due to low moment tolerances and little room may exclude a repair, you should contact the manufacturer beforehand.

Control Surfaces Play and Friction (Inspect annually)

	Play at inner edge	Friction
Elevator	Maximum 2.5 mm <0.1 in>	Maximum travel due to friction 50 mm <1.97 in>, measured at top end of control stick.
Aileron <*>	Maximum 2.5 mm <0.1 in>	200 to 500 grams <0.441 to 1.102 lbs> measured 30 mm below top end of control stick
Rudder	Not applicable	Up to 500 grams <1.102 lbs> measured at lower end of rudder

<*> Upper and lower side aileron sealing must always be existent !

Measuring Technique for rear edge play:

Play should be measured with control stick fixed to zero position.

Measuring Technique for friction:

Rudder friction should be measured at upper rudder edge.

Aileron friction should be measured 30 mm <1.2 in> from top end of control stick. Values include seals.

For elevator friction travel, set trim to about zero elevator deflection. Apply approximately 1/3 of travel and retard movement towards neutral position by hand. Measure resulting stick position. Repeat procedure for opposite movement, difference of both resulting positions yields to **travel due to friction**.

Limit values for Control Surface Deflections in mm / in

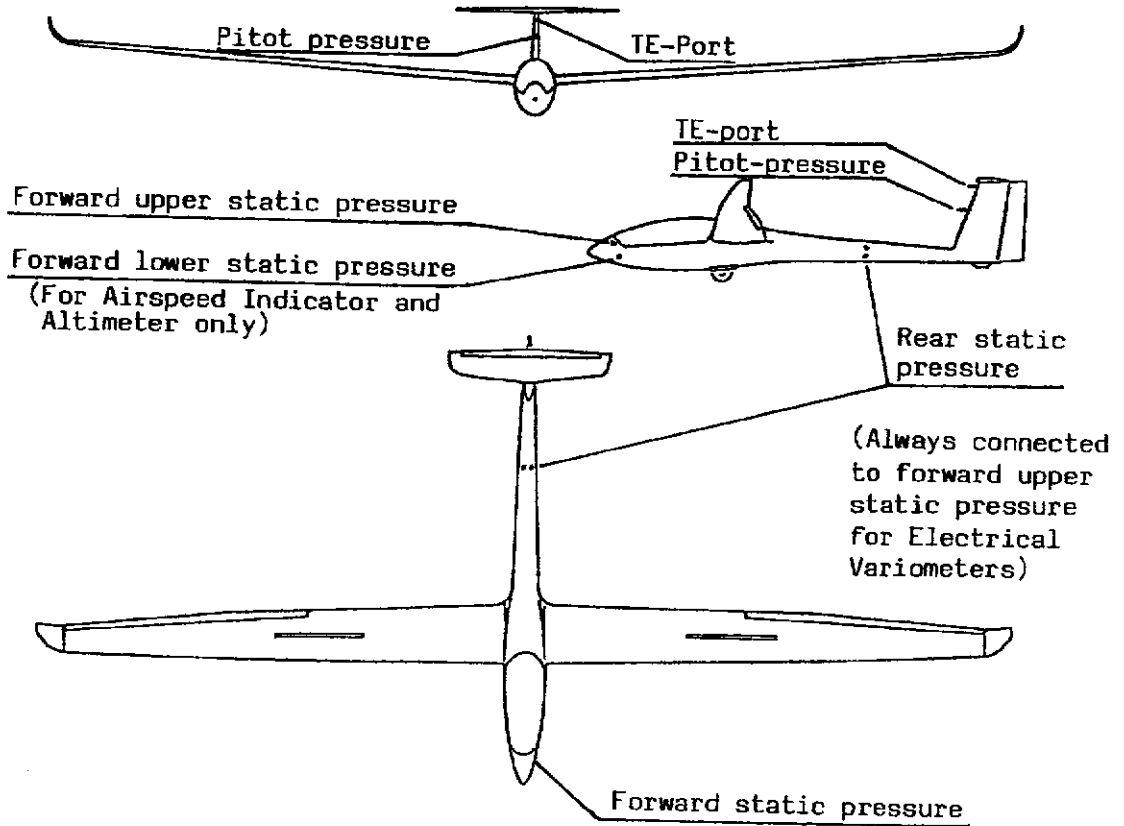
Aileron

local radius mm / in	13° to 15°		26° to 30°	
	mm	in	mm	in
75 / 2.953	17 to 20	0.669 to 0.787	34 to 39	1.339 to 1.535
76 / 2.992	17 to 20	0.669 to 0.787	34 to 39	1.339 to 1.535
77 / 3.031	17 to 20	0.669 to 0.787	35 to 40	1.378 to 1.575
78 / 3.071	18 to 20	0.709 to 0.787	35 to 40	1.378 to 1.575
79 / 3.110	18 to 21	0.709 to 0.827	36 to 41	1.417 to 1.614
80 / 3.150	18 to 21	0.709 to 0.827	36 to 41	1.417 to 1.614
81 / 3.189	18 to 21	0.709 to 0.827	36 to 42	1.417 to 1.654
82 / 3.228	19 to 21	0.748 to 0.827	37 to 42	1.457 to 1.654
83 / 3.268	19 to 22	0.748 to 0.866	37 to 43	1.457 to 1.693
84 / 3.307	19 to 22	0.748 to 0.866	38 to 43	1.496 to 1.693
85 / 3.346	19 to 22	0.748 to 0.866	38 to 44	1.496 to 1.732

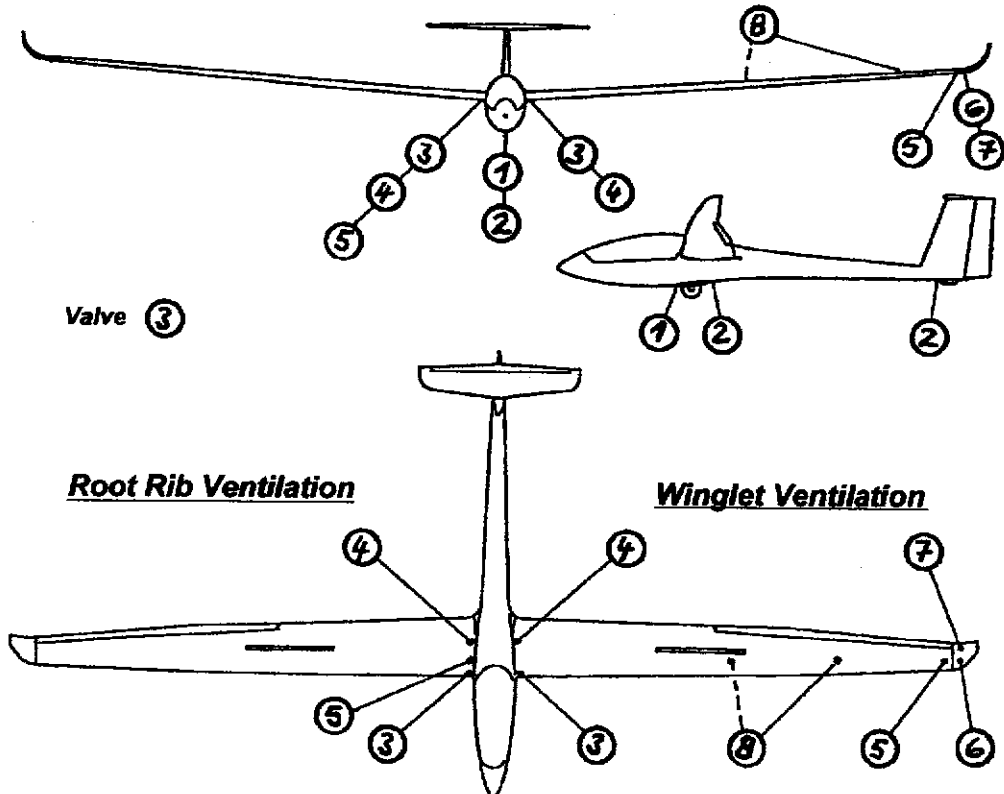
<u>Elevator</u>			<u>Rudder</u>		
			Measured value = Distance from trailing edge To centre of cable bolt		
local radius mm / in	-22° to -26° mm / in	28° to 30° mm / in	measured value mm / in	local radius mm / in	26° to 30° mm / in
67 2.638	26 to 30 1.024 to 1.181	32 to 35 1.260 to 1.378	395 15.551	390 15.354	175 to 202 6.890 to 7.953
68 2.677	26 to 31 1.024 to 1.220	33 to 35 1.299 to 1.378	396 15.591	391 15.394	176 to 202 6.929 to 7.953
69 2.717	26 to 31 1.024 to 1.220	33 to 36 1.299 to 1.417	397 15.630	392 15.433	176 to 203 6.929 to 7.992
70 2.756	27 to 31 1.063 to 1.220	34 to 36 1.339 to 1.417	398 15.669	393 15.472	177 to 203 6.969 to 7.992
71 2.795	27 to 32 1.063 to 1.260	34 to 37 1.339 to 1.457	399 15.709	394 15.512	177 to 204 6.969 to 8.031
72 2.835	27 to 32 1.063 to 1.260	35 to 37 1.378 to 1.457	400 15.748	395 15.551	178 to 204 7.008 to 8.031

Erstellt: 08.12.99 <i>Heucke</i>	Gepüft: <i>Whapka</i>	Complies:
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Pressure Ports



Drain Orifices



Erstellt: 06.10.99 <i>Heuck</i>	Geprüft: <i>Wagner</i>	Complies:
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Primary and Secondary Structure

No secondary structure available !

Edition: April 1999

Revision - 0

Page 8-2

List of Special Tools

Tool - Function

- Ratchet key - for assembly / disassembly of elevator and winglets
- Filling funnel with wire meshing - for filling of water ballast system through discharge openings, use together with adapters
- Vertical tail tank adapter - for testing of vertical tail fin valve, to avoid take-offs with unintentionally filled vertical tail tank, as well as for filling of tail tank together with filling funnel with wire meshing
- Wing adapter - for filling of wing tanks through discharge openings together with filling funnel with wire meshing

Edition: April 1999

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Page 9-1

Erstellt: 06.10.99 <i>Heuck</i>	Gepüft: <i>Wrayka</i>	Complies:
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Placards and Markings

Numbers refer to placards, for positions of placards see page 10-3.

LS 8-a Checklist

This sailplane must be operated in compliance with operating limitations stated in the form of markings, placards and Flight Manual.

1. Main pins secured ?
2. Horizontal tail secured ?
3. Winglets secured ?
4. Test controls ?
5. Tail fin valve operating checked ?
6. When water ballast, then always in wings and tail tank !
7. Check loading conditions
8. Check tail dolly removed
9. Fasten seat belt harness
10. Connect parachute static line
11. Lock air brakes
12. Check trim position
13. Check release system
14. Lock canopy

>1< at under side of instrument panel

Tyre Pressure 3 - 3.5 bar 43.5 to 50.8 psi	on right landing gear door
--	-------------------------------

Tyre Pressure 2.5 - 3.5 bar 36.3 to 50.8 psi	Above tail wheel, when fitted
--	----------------------------------

Maximum Baggage Weight 5 kg / 11 lbs (Soft items only)	at main bulkhead
---	------------------

ROLLADEN-SCHNEIDER Flugzeugbau GmbH	
TYPE	LS 8-a _____.
TCDS	402 _____.
Serial No.	8xxx _____.
Registration	D-xxxx _____.
	Made in Germany

>4< Type placard at main bulkhead

MINIMUM COCKPIT LOAD : _____ kg / lbs
Minimum Cockpit Load with empty tail tank: _____ kg/lbs
>2< under instrument panel cover

Rolladen-Schneider Flugzeugbau GmbH			
Type: LS 8-a	Serial Number: 8 _____		
Data Placard			
Airspeed Limits (IAS)	km/h	mph	Kt.
Winch Launch / Auto-Tow	140	87	76
Aerotow	190	118	103
In Rough Air	190	118	103
Never exceed (VNE)	280	174	151
Maximum Take-off Mass	525 kg (1157 lbs) including Water Ballast		
Aerobatic manoeuvres not approved			
Weight Limitations			
Maximum Cockpit Load	_____ kg	_____ lbs	
Minimum Cockpit Load	_____ kg	_____ lbs	
Minimum Cockpit Load with tail fin tank empty and without tail battery	_____ kg	_____ lbs	
Minimum Cockpit Loads for all combinations of tail tank and tail battery see Flight Manual pages 6-1/2.			
Lighter pilots must compensate lack of weight as suggested in Flight Manual			

>3< at right cockpit side

Ball of bearing Must be fixed	at forward horizontal tail attachment on vertical tail fin
----------------------------------	---

Batt. I Batt. II OFF	Electrical switch positions
----------------------------	--------------------------------

Placards and Markings continued

Numbers refer to placards, for positions of placards see page 10-3.

Use vertical tail fin battery only
With main fuse at battery

(under battery box cover of vertical tail,
if fitted)

When using a battery in the
vertical tail fin. Minimum
Cockpit Load must be
redetermined by weighing

(under battery box cover of
Vertical tail, if fitted)

Canopy Emergency Release: open left side normally,
Pull right side with approx. 15 kg/33 lbs force to stop

>19< at right canopy frame



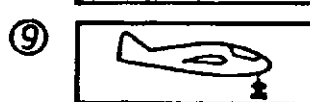
6 Retracted
in front of lever



7 Landing gear
Extended
behind lever



8 Trim tail heavy
near trim lever



9 Trim nose heavy
near trim lever



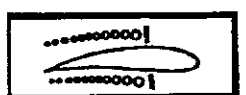
10 Canopy opening
at left lever



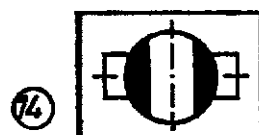
11 Canopy opening and emergency release
at right lever



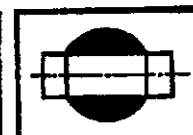
12 Tow cable release
left cockpit side



13 Air brakes
left cockpit side



14 Closed



15

Water ballast valve at right cockpit side



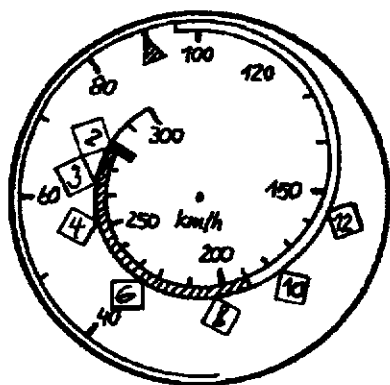
16 Backrest adjustment
at main bulkhead



17 Ventilation
at instrument panel



18 Pedal adjustment
at lower edge of
instrument panel



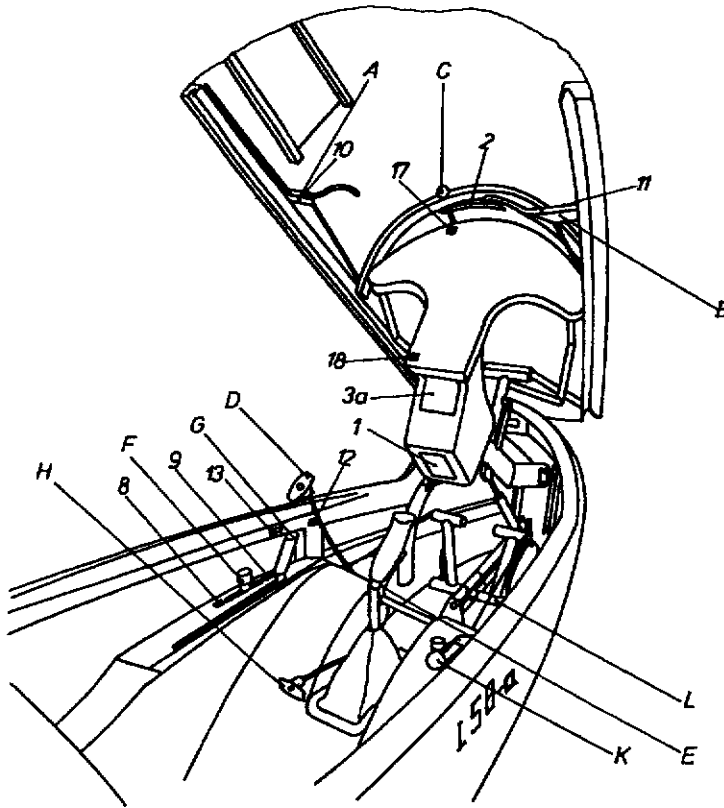
Airspeed Indicator (Diameter 80 mm <3.15 in>)

- green
- yellow
- red

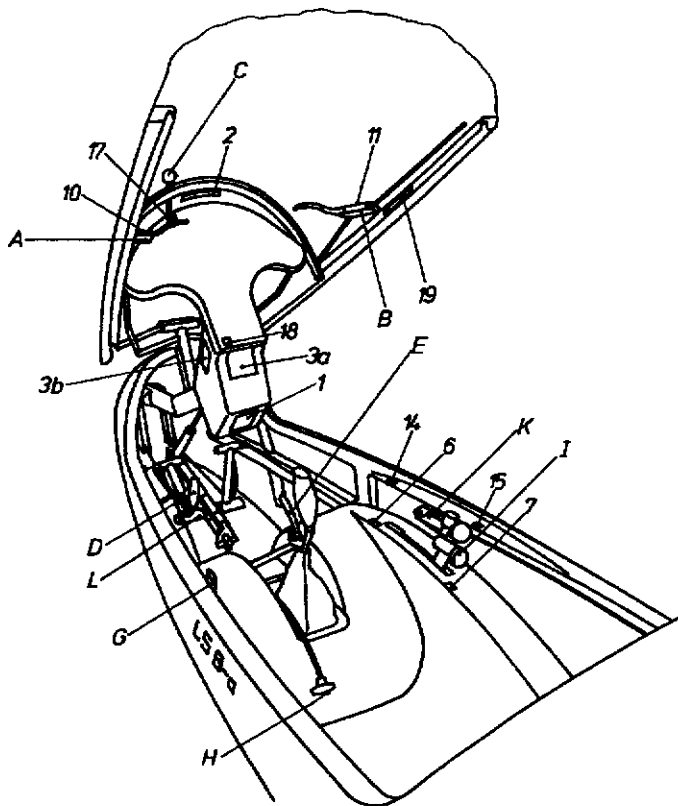
2 red
altitude related
VNE-marking
(here in km)

When the airspeed indicator is not equipped with these altitude related VNE markings, a placard must be near the ASI. For possible versions see Page 10-3.

Placards and Markings continued



- A – Left canopy locking
- B – Right canopy locking and emergency canopy release
- C – Ventilation
- D – Tow cable release
- E – Trim locking lever
- F – Trim lever, also indicating trim position
- G – Air brake handle
- H – Pedal adjustment
- I – Landing gear lever
- K – Water ballast
- L – Wheel brake (feet operated)



Altitude related Never Exceed Speed	km/h
Up to 2000 m MSL	280
Up to 3000 m MSL	266
Up to 4000 m MSL	253
Up to 6000 m MSL	227
Up to 8000 m MSL	202
Up to 10000 m MSL	179
Up to 12000 m MSL	156

On panel near airspeed indicator, for countries operating with metric units only.

Altitude related Never Exceed Speed	km/h	Kt.	mph
Up to 6500 ft MSL	280	151	174
Up to 9800 ft MSL	266	144	165
Up to 13100 ft MSL	253	136	157
Up to 19700 ft MSL	227	122	141
Up to 26200 ft MSL	202	109	126
Up to 32800 ft MSL	179	97	111
Up to 39800 ft MSL	156	84	97

On panel near airspeed indicator

Permanent Installation of Equipment in Baggage Compartment

Equipment may be permanently installed:

- a) Attached to landing gear box >5< using threaded spacers >1<, three of which are required per unit. Baggage compartment cover >4< has to be cut to avoid spacers, see drawing.

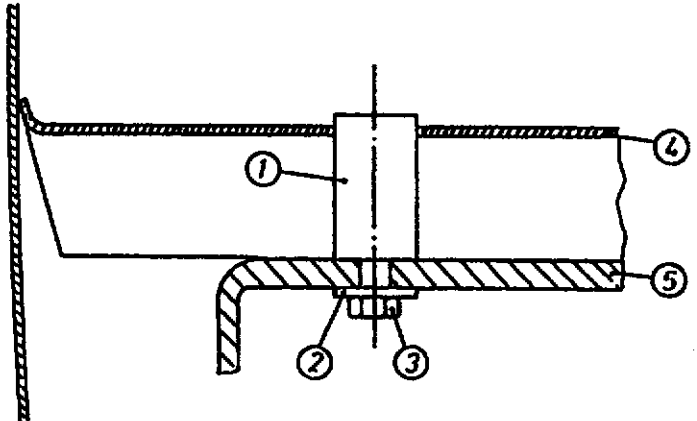
1 - Spacer, diameter 15 mm <0.6 in>, length 23 mm <0.906 in>. Part No. 4R7-8d.

2 - Washer B6.4 DIN 9021-St outer diameter 18 mm <0.71 in>

3 - Bolt 6 mm thread*10 mm DIN 85-A2, corrosion resistant

4 - Baggage compartment cover

5 - Landing gear box



- b) Attached to cover >2< behind spar connection and as close as possible to stiffening corrugation, approved for ELT and barograph only. See drawing.

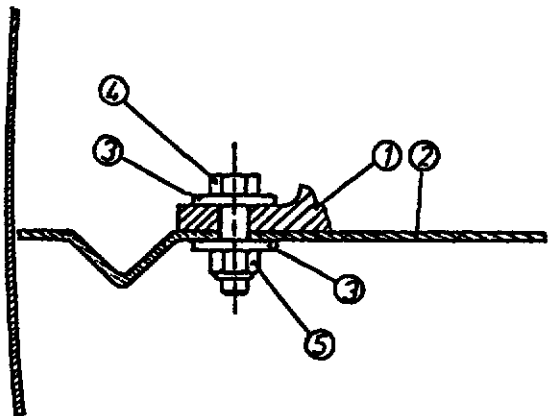
1 - Flange of unit

2 - Rear baggage compartment cover

3 - Washer B5.3 DIN 9021-St outer diameter 15 mm <0.59 in>

4 - Bolt 5 mm thread, length depending on flange thickness,

5 - Self locking nut, 5 mm thread, width over flats 8 mm, DIN 985 M5-8



Permanent Installation of fixed Ballast

Fixed Ballast under Instrument Panel

If empty weight C.G. position is too far back to allow 70 kg <154 lbs> as Minimum Cockpit Load, permanent installation of trim ballast (at position 1050 mm <41.34 in> in front of datum) under seat in front of control stick is possible. The trim weight holder according to drawing 4R8-134 can be ordered as optional equipment, installation according to drawing 3BR-149.

One weight (drawing 4R8-108) of 2.45 kg <5.4 lbs> shifts empty weight C.G. position about 17 mm <0.669 in> forward.

After permanent installation of fixed ballast, empty weight C.G. position should be redetermined by weighing, see chapter 2.

Fixed Ballast at rear fuselage end

In special cases empty weight C.G. position may be shifted rearward to allow heavy pilots to fly with rearward in-flight C.G. positions. Therefore it is possible to install a battery into the vertical tail fin (if a battery receptacle is fitted there) or a trim weight (drawing 4R8-109) at the vertical tail fin web lower end using a holder according to drawing 4R8-107b. The rear trim weight holder must be fitted to 4 mounting bolts of the elevator drive system, accessible after disassembly of the rudder.

Warning: *Never dismount the rear trim weight holder, bolts and nuts are fixing points for the elevator system!*

Maximum weight of rear trim weight: 2.5 kg <5.5 lbs>.

Tail fin battery type Dryfit or similar maintenance-free and gastight type, 12 V 5.7 Ah, measurements 150*99*33 mm <5.9*3.9*1.3 in>, maximum weight 2.6 kg <5.7 lbs>.

Warning: A battery must be equipped with an own main fuse.

All nuts self locking,

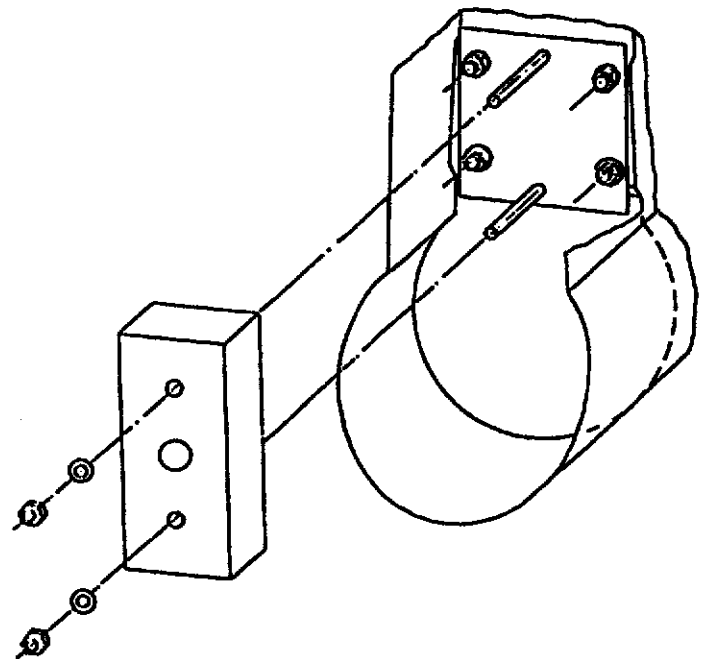
LN 9348 M6 or DIN 985 M6-8,

10mm width over flats, washers B6.4,

DIN 9021-St.

For disassembly and assembly of rudder see page 4-2; pay special attention to unobstructed movement !

When fitting or removing a trim weight at the vertical tail fin web, C.G. position must be re-determined by weighing according to chapter 2.



Trim weight installation at vertical tail fin web using rear trim weight holder (tail wheel box and lower rudder bearing not shown for clarity).

Master Equipment List

Specifications for Basic Equipment

Instrument installation position is related to Datum Point (Leading edge of wing at root).
 Provided values, when not otherwise notified, are for installation in upper instrument panel portion. Decrease values by 20 mm <0.787 in> for position in lower instrument panel portion.
 For other instruments than those used in the original certification, the instrument's negative C.G. distance from the panel mounting flange must be added to the upper (-985 mm <-38.78 in>) or lower (-965 mm <-37.992 in>) instrument panel portion distance.

1. Airspeed Indicator

Original certification was carried out using Winter 6FMS4-2 and 7FMS4-2 airspeed indicators with a range of 30 to 300 km/h and colour marking according to Flight Manual page 2-3.

A similar FAA approved airspeed indicator to meet TSO C2 reading to 300 km/h <160 Kt., 180 mph> may be used. Maximum instrument error $\pm 2\%$. Colour marking must be according to Flight Manual page 2-3.

Examples: AID 11-1002-1 or KI 8000

2. Altimeter

Original certification was carried out using Winter 4FGH10 or 4FGH20 altimeters with a range of 0-1000-10000 meters (approx. 33000 ft).

A similar FAA approved altimeter to meet TSO C10 with a range of approximately 33000 ft and a mercury or millibar or hektopascal subscale may be used. When an altimeter of up to 20000 ft only is being used, a placard must be near the altimeter stating: Maximum flying altitude 20000 ft.

See also Flight Manual page 2-8.

Examples: Kollsman Type 378222 or AID 13-2000-1 or AID 13-2000-5

3. Magnetic Compass

Original certification was carried out using an Airpath C 2400 compass.

Any FAA approved magnetic compass (non-stabilised type) to meet TSO C7 may be used.

Examples: Airpath C 2300

4. Seat Belt Harness (with multiple point buckles)

Gadringer	lap belt	Bagu	5402
	shoulder strap	Schugu	2700

Schroth	type	4-01-1A52xx(Not entered digits xx denominate colour of lap belt and shoulder strap webbing material)
---------	------	--

Autoflug	lap belt	Bagu	FAG-12D with multiple point buckle MS-17/B
	shoulder strap	Schugu	FAG 12H

5. Remote indicating thermometer:

Störck: TF-00-059 K - Feeler gauge in ventilation duct or in landing gear box..

Master Equipment List continued

6. **Optional Instruments**

a) **Mechanical Variometer** (Vertical speed indicator)

Winter 5 StV5	Bohli 68 PVF1 or 68 PVF2
PZL WRS-5D	Schueman SV or CV

b) **Electrical Variometer**

All models of the following named manufacturers:
Blumenauer – Cambridge – Flexum – ILEC – Peschges – Westerboer – Zander.

c) **Turn and Bank Indicator**

Gauting WZ 402 models	PZL EZS-3
RC Allen 12W2D2A or 12W2D2S	Kelvin & Hughes: KTS 0406 or KTS 0406 R

d) **Horizon Reference Indicator** (Electrical Gyro Horizon)

Gauting 6536/6	AIM 500-DCF
RC Allen RCA 26 AK-4	

7. **Electrical Installation**

a) **Battery**

Only life sealed batteries are recommended (Gel cell or Nickel-Cadmium types)
Battery type must be chosen in relation to power requirements to guarantee 8 hours of continuous service. For "German" type radio plus electrical variometer 12V 5.7 Ah are adequate.
Power requirement for average "German" type radio is 1.5 A for transmitting, 0.4 A for receiving voice and 0.06 A for standby.
Examples: Dittel (Dryfit) ZT 092: 12V 6.5Ah including battery holder for baggage compartment. Installation according to page 11-2; measurements 166*70*132 mm (length*width*height) <6.54*2.76*5.20 in>.
For tail fin batteries see page 11-1.

Warning: Each battery must be equipped with an own main fuse.

b) **Switches**

Marquardt 2A 250V or other manufacturers

c) **Fuses**

Microfuse 20*5 mm DIN 41571 or
Circuit Breakers Klixon 7277-2 or 7274-2 or similar ones.

Ratings:

Master:	10A (Minimum)	quick acting
	5A quick acting:	Radio Becker/Dittel
	1A quick acting:	Electrical variometers, Turn and bank indicator

d) **Radio**

Walter Dittel FSG series, Becker AR series, Avionic Dittel ATR series

Antenna

Becker Antenna for vertical tail fin, 118 – 136 MHz
Schicke 1A005

Master Equipment List continued

8. **Landing Gear**

<u>Main wheel</u>	Tost Kobold 103/20, 4 inch in diameter
Tyre	Continental 4.00-4 6PR / Tost Aero 61J 4.00-4 6PR
Tube	Continental 4.00-4
<u>Tail wheel</u>	Streifeneder 210*65
Tyre	Continental 210*65
Tube	Continental 210*65

9. **Release Mechanisms**

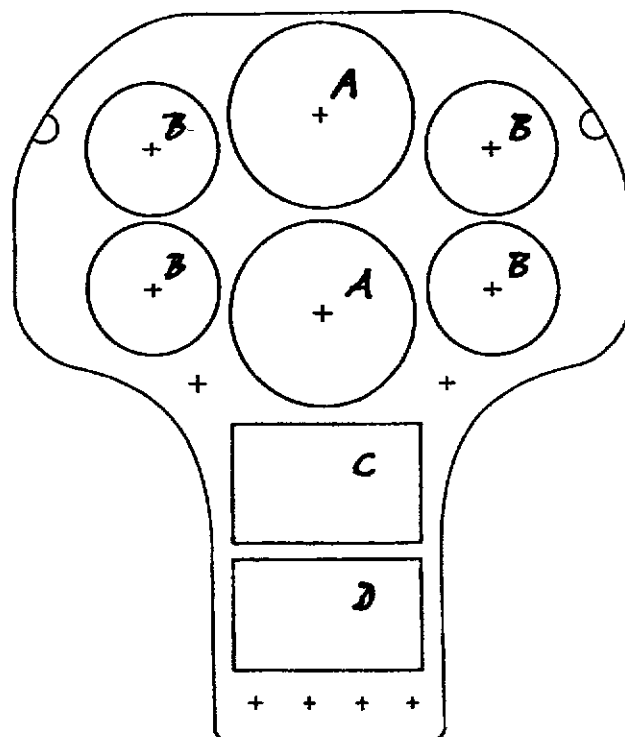
C.G. hook	Tost Europa G88 or G73 or G72
Nose hook	Tost E85 or E75 or E72

10. **Instrument Panel Versions**

Small crosses outside instrument contours indicate possible places for fuses and electrical switches.
Instrument flanges and fixing screws not drawn !

Version 1:

- A - 2* 80 mm Ø <3.15 in>
- B - 4* 60 mm Ø <2.36 in>
- C - 1* 82*51 mm <3.2*2.0 in>
- D - 1* 82*48 mm <3.2*1.9 in>



Maximum mass of all Instrument Panel Installations max. 6.7 kg <14.8 lbs>

Edition: April 1999

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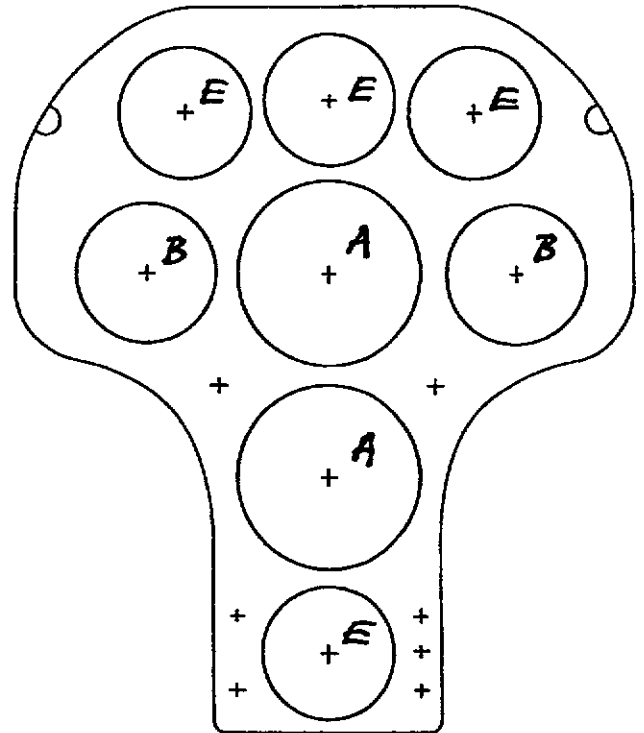
Erstellt: <i>Heuvel</i> 07.10.99	Geprüft: <i>Whapler</i>	Complies:
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Master Equipment List continued

10. **Instrument Panel Versions** continued

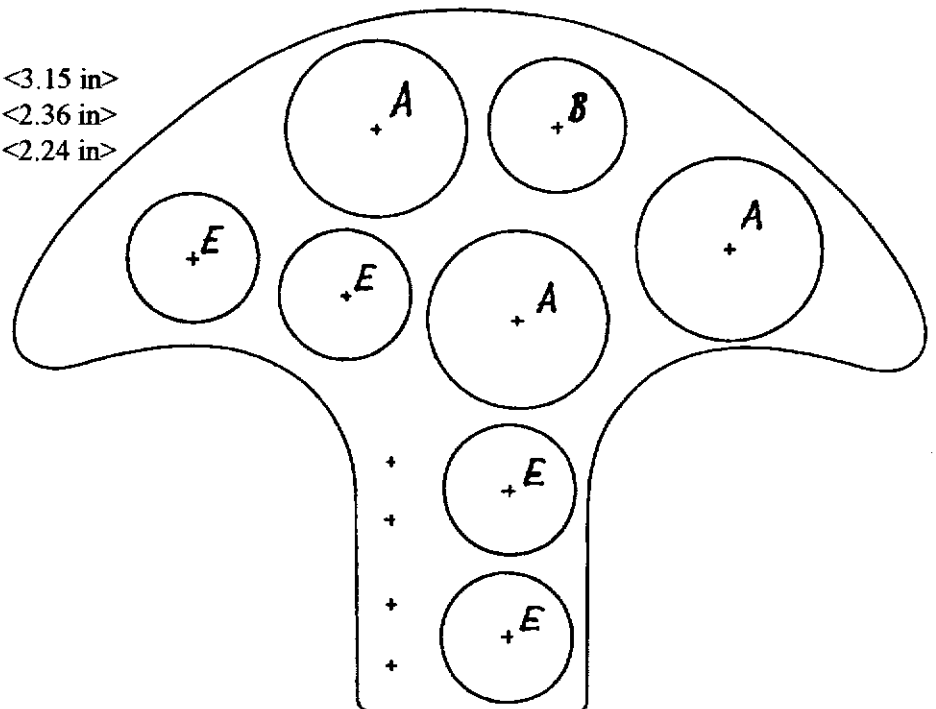
Version 2:

- A - 2* 80 mm Ø <3.15 in>
- B - 2* 60 mm Ø <2.36 in>
- E - 4* 57 mm Ø <2.24 in>



Version 3:

- A - 3* 80 mm Ø <3.15 in>
- B - 1* 60 mm Ø <2.36 in>
- E - 4* 57 mm Ø <2.24 in>



Maximum mass of all Instrument Panel Installations max. 6.7 kg <14.8 lbs>

Erstellt: 07.10.99 <i>Heucke</i>	Geprüft: <i>Wagner</i>	Complies:
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Materials and Sources of Supply

Resin + Hardener: Scheufler L 285 + 285 / 286 / 287

Mixture Ratio: 40 parts per weight hardener for 100 parts of resin. After mixing stir thoroughly until all optical inhomogeneities have disappeared. Thereafter take test specimen and add filler material later.

Fibre Glass Fabric:

Alkalifree E-glass, Volan-A-Finish or
finish I-550, FK 144

Manufacturer: Interglas AG,
Postfach 1103
89151 Erbach

Interglas No.	Kind of weave	Weight(g/m ²)	Usage
90070	Linen	79	elevator
92110	2/2 twill	163	stabiliser
92125	2/2 twill	280	local reinforcing
92145	Unidir. Plain	216	fuselage
92146	Unidir. Plain	440	fuselage

Carbon Fibre Fabric: Manufacturer Interglas

98320	Linen	132	wings, spar box, stabiliser and elevator, aileron
-------	-------	-----	---

Aramid Fibre Fabric (Kevlar): Manufacturer Interglas

98605	Linen	61	Rudder, Elevator
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Polyester Fabric:

34048	Linen	206	Fuselage Manufacturer: P.A.Lückenhaus & Co. Postfach 200805 42208 Wuppertal
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Foam:

PVC foam Divinycell H 60, 8 mm thick, weight 60 kg/m²,
<vertical tail fin>, Manufacturer: Diab-Barracuda GmbH
Freudenthalstr. 25
30419 Hannover 21

PVC foam Divinycell HT 70, 6/8/10 mm thick, weight 70 kg/m²,
<spar web, horizontal tail>, Manufacturer: Diab-Barracuda GmbH
Freudenthalstr. 25
30419 Hannover 21

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Erstellt: 07.10.99 <i>Heucke</i>	Gepriift: <i>Wapka</i>	Complies:
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Materials and Supplies continued

Foam continued

PVC foam Klegecell TR 75, 8mm thick, Weight 75 kg/m², Manufacturer: Polimex S.p.A.
<wings> Via Frigimelica 2
I-35139 Padua

Foam Rohacell 71, 2.5 mm thick, weight 70 kg/m², Manufacturer: Röhm GmbH
<control surfaces> Kirschenallee
64293 Darmstadt

Filler Materials:

Microballons:	Manufacturer:	Lackfabrik Bäder KG Postfach 25 73701 Esslingen
Aerosil Type 200:	Manufacturer:	A+E. Fischer Postfach 130202 65090 Wiesbaden 13
Cotton flocks TypeFL1f:	Manufacturer:	Schwarzwälder Textilwerke Postfach 25 77771 Schenkenzell

Gelcoat:

UP-Vorgelat white T 35: Hardener SF 2 Thinner SF	Manufacturer:	Martin G. Scheufler Kunstharzprodukte GmbH Am Ostkai 21/22 im Stuttgarter Hafen 70321 Stuttgart 61
Mixture ratio: for brushing-on:	2% (weight) hardener for 100% (weight) of T35	
for spraying:	10% (weight) thinner for 100% (weight) of T35, then add 2-3 % (weight) of hardener	

Warning Colour:

Nitro Cellulose Kombilack: reinorange RAL 2004 (orange) or rot RAL 3000 (red)	Manufacturer:	Lackfabrik Bäder KG Postfach 25 73701 Esslingen
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Water Tank Inner Protective Paint

780 CC Kronalux Schwimmbadfarbe:	Manufacturer:	Hersteller: Paul Jaeger GmbH & Co KG Siemensstr.6 71696 Möglingen
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Repairs of Metal Fittings should not be performed before the manufacturer has been consulted. Most fittings are made from 1.7734.4 aircraft material and welded in 141-WIG process (Shielded arc welding). In no case should they be gas welded, because required properties of the material will disappear.

Materials and Supplies continued

Cable Systems

1. Rudder:
 - cable: B 3.2 mm LN 9374 (zinc plated)
 - cable sleeves: Nicopress 28-3-M, 3 pressings required, with tool groove Oval M
(For details see FAA "Aircraft Inspection and Repair")
 - steel thimbles: A 3.5 DIN 6899

2. Release Mechanism and Wheel Brake
 - cable: A 2.4 mm LN 9389 (corrosion resistant)
 - cable sleeves: Nicopress 28-2-G, 1 pressing required, with tool groove Oval G
 - steel thimbles: A 2.5 DIN 6899
 - stop sleeve: Nicopress 871-17-J, 1 pressing required, with tool groove J

3. Tail Fin Tank:
 - cable: 1.2 mm LN 9389 (corrosion resistant)
 - cable sleeves: Nicopress 28-2-G, 1 pressing required with tool groove J,
thereafter 1 pressing required with tool groove Oval G
 - steel thimbles: A 1.7 DIN 6899

Longitudinal Motion Pushrod Bearings

During repairs, never pull pushrods out of longitudinal motion bearings, because all balls will leave their cages. Consequently, for re-installation near each bearing an opening must be cut and repaired afterwards.

These bearings are being used throughout the wing control systems, in the fuselage for elevator-, aileron- and landing gear drive systems.

Warning: Longitudinal motion pushrod bearings should never be greased or oiled, their plastic balls and bearing surfaces will soon be destroyed due to collection of small foreign matter !

Edition: April 1999

Revision - 0

Page 13-3

Erstellt: 07.10.99 <i>Heucke</i>	Geprüft: <i>Wrapha</i>	Complies:
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Serial Number:

Reg. Signs:

Year of Manuf.:

TB LBA-AD	Components concerned	Date	Steps / Modification	I*	perio dical	Time Limit	Accomplishment Inspector
8001	Preparation for LS8- 18	12.06.96	Structural Modifications during Manufacture	X		opt.	
8002	Modification from LS8-a to LS8-18	11.03.99	Outer wingtips (only with TB 8001)	X		opt.	
8004/2 99-268/2	Canopy jettison for 40 cm wide instrument panel	12.02.01	Installation of deflector 3R7-73 and edge protector	1*		Before next flight	
8005 2000-084	Wing air brake levers	14.09.99	Check for corrosion and jamming	X		Before next flight	
8006 / 2 2000-086	Additional draining of both outer wingtanks	21.10.99	Closing of tubes when malfunction occurs	X		From case to case only	
8007 2000-067	Flight and Maintenance Manuals LS8-a	25.11.99	LBA-approved manuals, Edition April 1999	X		Within 3 months	
8009	Flight Manual LS8-a in English language	31.05.00	Correction of water tank filling sequence	X		Before use of water	
8010 2001-200	Inspection Program Approval for increase of Service Life	15.11.00	None	X		Before 3000 hours	
8011 2002-082	Optional trim by removal of tail fin battery.	01.12.01	Flight Man. Rev. 1 Maint. Manual Rev. 2	X	--	Before next Annual	

Erstellt: 04.04.02	Geprüft:	Complies:
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Serial Number: _____ | Reg. Signs: _____ | Year of Manuf.: _____

TB LBA-AD	Components concerned	Date	Steps / Modification	1*	periodical	Time Limit	Accomplishment Inspector

Erstellt: <i>Gewerke</i> 07.10.99	Geprüft: <i>Wagner</i>	Complies: _____
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Serial Number: _____

Reg. Signs: _____

Year of Manuf.: _____

List opened date: _____

Signature: _____

Page No. 1

<u>TB</u> LBA- AD	Components concerned	Steps / Modification	Interval	Date Fl.-hours Stamp Inspector	Datum Fl.-hours Stamp Inspector	Datum Fl.-hours Stamp Inspector	Datum Fl.-hours Stamp Inspector	Datum Fl.-hours Stamp Inspector
	<i>C.G. hook</i> G: _____ S/N.: _____	<i>Overhaul</i>	<i>2000 take- offs</i>					
	<i>Nose hook</i> E: _____ S/N.: _____	<i>Overhaul</i>	<i>2000 take- offs</i>					
	<i>Seat belt harness</i> S/N.: _____ S/N.: _____	<i>Overhaul- Exchange Webbing</i>	<i>12 years</i>					
	<i>ELT ACK E01 Batteries Duracell MN 1300</i>	<i>Exchange</i>	<i>According to printed Date of expiry</i>	<i>until</i>				
	<i>ELT-Remote Control Battery PX 28 (Alkaline) PX28L (Lithium)</i>	<i>Exchange</i>	<i>max. 4 years max. 8 years</i>	<i>until</i>				

Edition: Dec 2001

Revision – 1 (TB 8011)

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Prepared: 01.12.01	Verified: <i>W. Hapke</i>	Complies:
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Serial No.: _____ | Reg. Signs: _____ | Year of Manuf.: _____

Operator:	
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Total flying time since Manufacture: _____ Hours with _____ landings
 Flying time since last Annual Inspection: _____ Hours with _____ landings

- | | |
|--|---|
| <input type="checkbox"/> Final Production Inspection | <input type="checkbox"/> Airworthiness Directive Inspection |
| <input type="checkbox"/> Annual Inspection | <input type="checkbox"/> Repair Inspection |
| <input type="checkbox"/> Modification Inspection | <input type="checkbox"/> _____ |

Seq. No.	Report or Findings	Remarks	Signed
1	Check Control Surface Deflections		
2	Check Operating Instructions according to TCDS		
3	Check Placards as given in Flight Manual		
4	Minimum Cockpit Load Tail tank full: _____ kg/lbs Tail tank empty: _____ kg/lbs		
5	Maximum Cockpit Load: _____ kg/lbs		
6	C.G. Hook S/N: _____ operational until:		
7	Nose Hook S/N: _____ operational until:		
8	AD's performed:		
9	Technical Bulletins performed:		
10	TB-AD-List Maintenance Manual page 14-1		
11	Repetitive Inspections Checklist page 14-2		
12	Tail fin: Tank : _____ litres combined with battery box.		
13			
14			

Compass Deviation List:

For:	N	30	60	E	120	150	S	210	240	W	300	330		Signed
Steer:														

The following reports are valid for this inspection report:

Checklist dated:		Equipment List dated:	
Inspection Certificate dated:		Control System Deflections 1 / 2 dated:	
Flight Test Report dated:		Control Surface Weight / Moment Report dated:	
Findings Report dated:		TB-AD-Checklist dated:	
Weighing Report dated:		Repetitive Inspections Checklist dated:	

The sailplane is airworthy.

Place: _____ Date: _____ Stamp: _____ Signature: _____

Edition: April 1999

Revision - 0

Page 14-3

Erstellt: 07.10.99 <i>Heucke</i>	Geprüft: <i>Whapka</i>	Complies:
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Serial No.: _____ | Reg. Signs: _____ | Year of Manuf.: _____

Component Mass (check when equipment altered or every fourth year)

Right wing + WL	kg/lbs	Maximum all- up Weight	525 kg / 1157 lbs
Left wing + WL	kg/lbs	Maximum Weight of Non-Lifting Parts at	kg/lbs
Fuselage + Canopy + Main pins	kg/lbs	W: _____ - _____ kg/lbs, Xcg: _____ mm/in	
Minimum Equipment permanently inst.	kg/lbs	according to Table pages 2- 4/2- 5	
Addit. Equipment	kg/lbs	Fuselage (completely equipped)	kg/lbs
Horizontal Tail	kg/lbs	Horizontal Tail	kg/lbs
Empty Mass <W>	kg/lbs	Cockpit Load (max. 110 kg or 242 lbs)	kg/lbs
		Weight of Non-Lifting Parts	kg/lbs
		Winglet left	kg/lbs
		Winglet right	kg/lbs

Fixed Ballast Weight Position:

In tail fin: _____ kg/lbs
: _____ kg/lbs

Battery Position: _____

Tail battery _____ kg/lbs
 weight (2.5 - 2.7 kg / 5.5 - 6 lbs)

Weighing and Empty Mass C.G. Determination (check when equipment altered or every fourth year)

Technical data according to TCDS Datum point <DP>: _____ Datum line <DL>: _____
 Leading edge of wing at root Under side of fuselage boom horizontal

Empty mass <W>	kg/lbs	Distance wheel axis- Datum point <a>	mm/in
Nett tail mass <W2>	kg/lbs	Distance wheel axis- Tail support 	mm/in
Tail fin water <Wa>	kg/lbs		

with tail tank full and tail battery		with tail tank empty and tail battery	
$\frac{(W2+Wa+B)*b}{W+Wa+B} + a = Xcg$	_____ mm _____ lbs	$\frac{_____ * _____}{_____} + _____ = _____$	_____ mm _____ lbs
Empty Mass: _____ kg/lbs		_____ kg/lbs	
Empty Mass C.G. range from: _____ mm/in to: _____ mm/in		_____ mm/in to: _____ mm/in	
Cockpit Load range from: _____ kg to: _____ kg/lbs		_____ kg/lbs to: _____ kg/lbs	

Minimum Cockpit Loads:	Tail tank Ltr. full	Tail tank empty
	kg / lbs	kg / lbs
	kg / lbs	kg / lbs

Maximum Cockpit load: kg / lbs limited by C.G. Table / Weight of Non-Lifting Parts

Weight and Balance Placard and Minimum Cockpit Load Placard in cockpit as well as entry in Flight Manual page 6- 2 have been checked/updated. Equipment during weighing/calculation see equipment list dated: _____

Note: See also maintenance manual, chapter 2. State dimensions used. Redetermine distances a and b, because of possibly altered suspension level.

Place: _____ Date: _____ Stamp: _____ Signature: _____

Edition: Dec. 2001 Revision - 1 (TB 8011) Page 14-4

Prepared: 01.12.01	Verified: <i>[Signature]</i>	Complies:
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Serial No.: _____ | Reg. Signs: _____ | Year of Manuf.: _____

Minimum Equipment (check function annually, calibrate every fourth year)

	Type	Manufacturer	Serial- No.	Instr. Pos.	Certificate	Function
Airspeed Ind.						
Altimeter						
Radio						
Microphone						
Loudspeaker						
Battery						
Battery Holder						
Lap Belt				Seat		
Shoulder Strap				Main Bulkh.		
C.G. Hook	G 88	Tost		Landing Gear		
Nose Hook	E 85	Tost		Nose		
Thermometer	TF-00-59K	Störck		Under I.-Panel		
Tail tank Adapt.	4 BR- 169	Roll.- Sch.		Cockpit Pocket		

Additional Equipment

	Type	Manufacturer	Serial- No.	Instr. Pos.	Certificate	Function
TE-Probe				Tail Fin		
Variometer						
4"-brake wheel	Kobold 103- 20	Tost		Landing Gear		

Place: _____ Date: _____ Stamp: _____ Signature: _____

Edition: April 1999

Revision - 0

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Erstellt: 07.10.99 <i>Greuter</i>	Geprüft: <i>W. Kaplan</i>	Complies:
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Serial No.: _____ | Reg. Signs: _____ | Year of Manuf.: _____

Control Surface Mass (check whenever a change is suspected and after repairs)

	Limit values	Measured values	
<u>Aileron</u>	<u>without</u> Mass Balance	left	kg lbs
		right	kg lbs
	<u>with</u> Mass Balance	left	kg lbs
		right	kg lbs
<u>Elevator</u>	1.30 to 1.65 kg 2.866 to 3.638 lbs	kg lbs	
<u>Elevator Drive Rod Mass</u>	for 100% Mass Balance	kg lbs	
<u>Rudder</u>	4.000 to 6.000 kg 8.818 to 13.228 lbs	kg lbs	

Control Surface Moment (check whenever a change is suspected and after repairs)

	Hinge-Moment Limits	Rear Edge Weight*	Hor. Ref. Line	= Moment	
<u>Aileron</u> <u>without</u> Mass Balance	5.67 to 7.50 cmkg 78.74 to 104.155 in oz	left	kg lbs	cm in	cm kg in oz
		right	kg lbs	cm in	cm kg in oz
		left	kg lbs	cm in	cm kg in oz
		right	kg lbs	cm in	cm kg in oz
<u>Aileron</u> <u>with</u> Mass Balance	2.04 to 3.87 cmkg 28.33 to 53.744 in oz	left	kg lbs	cm in	cm kg in oz
		right	kg lbs	cm in	cm kg in oz
<u>Elevator</u>	3.48 to 4.60 cmkg 48.330 to 63.882 in oz	kg lbs	cm in	cm kg in oz	
<u>Rudder</u>	±1.60 cmkg ±22.21 in oz	kg lbs	cm in	cm kg in oz	

1 cm kg = 13.887 in oz

Cross invalid dimensions

Place: _____ Date: _____ Stamp: _____ Signature: _____

Edition: April 1999

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Erstellt: 07.10.99 <i>Heucke</i>	Geprüft: <i>Wagner</i>	Complies: _____
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Serial No.: _____ Reg. Signs: _____ Year of Manuf.: _____

Aileron

Measured between inner aileron and wing edge

radius Left: _____ mm/in Right: _____ mm/in

	Limit [°]	Actual [°]	Limit [mm/in]	Actual [mm/in]
Left up	-26° to -30°		to	
	down	13° to 15°	to	
Right up	-26° to -30°		to	
	down	13° to 15°	to	

Elevator

Measure at outer edge, radius: _____ mm/in

	Limit [°]	Actual [°]	Limit [mm/in]	Actual [mm/in]
Up	28° to 30°		to	
Down	22° to 26°		to	

Rudder

Measure at lower edge, radius: _____ mm/in

	Limit [°]	Actual [°]	Limit [mm/in]	Actual [mm/in]
left	26° to 30°		_____ to _____	
right				

Place: _____ Date: _____ Stamp: _____ Signature: _____

Edition: April 1999

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Erstellt: 08.12.99 <i>Heucke</i>	Gepriift: <i>Whepha</i>	Complies:
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Serial No.: _____ | Reg. Signs: _____ | Year of Manuf.: _____

Air Brakes

Minimum average extension 150 mm / 5.91 in

Actual: left: _____ mm/in right: _____ mm/in average: _____ mm/in

Control System Friction

Limit	Actual	Point of Measurement
<u>Elevator friction travel</u> maximum 50 mm / 1.97 in	mm/in	Upper stick end
<u>Aileron</u> minimum 200 gr. / 0.220 lbs	gr./lbs	30 mm / 1.2 in below stick end
<u>Rudder</u> maximum 500 gr. / 1.102 lbs	gr./lbs	At lower rudder edge

Control Surface Rear Edge Play (fix control stick at neutral position of control surface)

Aileron maximum 2,5 mm / 0.098 in: left : _____ mm/in
right: _____ mm/in

Elevator maximum 2,5 mm / 0.098 in: _____ mm/in

(Cross invalid dimensions)

Place: _____ Date: _____ Stamp: _____ Signature: _____

Edition: April 1999

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Erstellt: 07.10.99 <i>Heinke</i>	Geprüft: <i>Wolfgang</i>	Complies:
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Serial No.: _____ | Reg. Signs: _____ | Year of Manuf.: _____

Operator:		Pilot: _____	
		Airfield: _____	Take Off: _____
		Aero tow / Winch Launch	Landing: _____

Empty Weight <Weighing Report>: _____ kg/lbs Removable Trim Ballast: _____ kg/lbs
Pilot with Parachute: _____ kg/lbs Total Flying Weight: _____ kg/lbs

Findings (not available = 0 without objections: = + with objections = -)

1	On Ground	safety harness: _____ pedal adjustment: _____ visibility: _____ handles: _____ seat adjustment: _____ canopy locking: _____ ventilation: _____ control system: _____	
2	Take-off	Tow altitude: _____ m, Tow speed (IAS): _____ km/h	
3	Tow Release	manual: _____ automatic: _____ (tested on ground)	
4	Landing Gear	retract: _____ extend: _____	
5	Instrumentation Function		
6	Radio Function	on ground: _____ during take off: _____	
7	Slow Flight	stalling speed (IAS): _____ km/h	
8	Normal Flight	controls free, trim neutral: _____ km/h reference 110 – 130 km/h	
9	Trim Range	from (IAS): _____ to: _____ km/h reference from slow flight to 180- 210 km/h	
10	Circling Flight		
11	Effectiveness of Controls	elevator: _____, rudder: _____, aileron: _____	
12	Straight Flight	trimmed at 80 km/h : _____, at 120 km/h : _____, at 200 km/h : _____ (controls free) resulting middle stick position : _____, _____, _____	
13	High Speed Flight (be alert to danger of flutter)	up to (IAS): _____ km/h	
14	Air Brakes	forces during extending and retracting	
15	Sideslip and Landing	(with / without air brakes)	

Operating alright.	Alright after accomplishing complaints	New flight test necessary
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Remarks:	all speeds: km/h / Kt. / mph	all weights: kg / lbs	altitudes: m / ft
Reference speed	km/h 80 110 120 130 80 200 210		
Value table:	Kt. 43 59 65 70 97 108 113		
	MPH 50 68 75 81 112 124 130		

Pilot's signature _____

Place: _____ Date: _____ Stamp: _____ Signature: _____

Edition: April 1999

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Erstellt: 07.10.99 <i>Heuck</i>	Geprüft: <i>Wheeler</i>	Complies: _____
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Serial No.: _____ | Reg. Signs: _____ | Year of Manuf.: _____

<p><u>Wings</u> Serial No.: _____ Finish condition Spar stub Root ribs and pins Sandwich shell condition Drain orifices Ailerons Air brakes Connecting means Aileron pressure marks -Drives at ailerons -Drives at root ribs -fixed bearing + washer -Bearings -Lateral bearing gaps -Lateral gaps to wing -Sealing -Stops -Ventilation -Cracks / buckling Air brake bearings -Cover springing -Drive at root rib -locking -Friction damper function Main pins Serial No. _____ <u>Wing water system</u> Drain valve at root rib Function + tightness Tanks-Externally tight -Tight between tanks -Valve adjustment 1. Ventilation inner tank 2. Ventilation inner tank Ventilation outer tank Discharge time _____ (min. 180 Seconds)</p>	<p><u>Winglets</u> Winglet shell Spar tube Pins Winglet skids Assembly free from play Locking of ratchet Ventilation openings <u>Horizontal tail</u> Serial No.: _____ Finish condition Sandwich shell condition Stabiliser ventilation Elevator ventilation Elevator drive lever Elevator drive bearings Bearings Fuselage connection Connecting means Sealing <u>Fuselage</u> Serial No.: _____ Finish condition Shell condition Cracks Drain orifices Rudder mounting Stabiliser mounting Tangential tubes Bushes for wing root pins Locking of bushes Cockpit Seat Under seat Lap belt fixing at seat Control stick Elevator drive under seat Aileron system under seat Aileron connectors -Deflectors straight</p>	<p><u>Fuselage</u> continued Air brake system Air brake connectors Trim system Trim operation + locking Pedals -Adjustment + locking Rudder cables Earth connections Backrest locking -Upper end stop -Lower end pins + bolt Trim weight holder -Fixing nut Nose hook fitting -Drive Tail skid – cable deflector at front end -Skid bonding Tail wheel Connecting means Water ballast system <u>Tail fin tank</u> Volume: _____ Litres Tail tank adapter existent Cable wear -Corrosion Valve operating ease Functioning Funnel filter, level indicator Opening before/with wing Discharge time for (7.5 Ltr.): _____ Sec. (max. 90 Sec) Tail fin battery box -battery box cover</p>
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Place: _____ Date: _____ Stamp: _____ Signature: _____

Erstellt: 11.10.99 <i>Leurki</i>	Geprüft: <i>Heupla</i>	Complies:
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Serial No.:

Reg. Signs:

Year of Manuf.:

Check wing air brake levers für corrosion at lower end.			
Pull with about 25 kg <55 lbs> force at upper end of each lever in flight direction, simultaneously retract without twisting upper member (do not counterhold at cockpit lever!).			
When under load of last item locking at wing structure results, then bearings at related lever must be exchanged immediately by repair station according to repair instruction "Air Brake Levers".			
Bearings should be exchanged within 6 months, when corrosion is clearly visible, but no locking or jamming occurs.			
Valid C.G. weighing dated _____		Flight Hours	Entry of Cockpit Load in Cockpit + Flight Manual checked, unaltered
		Total _____ hr.	
Valid Equipment List dated _____		Last Ann.. _____ hr.	Changed to _____ kg/lbs
		Take-offs	
		Total _____	
		Last Ann.. _____	

Inspect automatic couplings for possible wrong rigging
Permanent installation of equipment in baggage compartment according to chapter 11
Special inspection hints according to chapter 3 taken care of
Technical Bulletins performed: _____
AD's performed: _____
TB-AD-List page 14-1 updated
TB-AD Accomplishment List for Repetitive Inspections page 14-2 obeyed
TB-AD Accomplishment List for Repetitive Inspections page 14-2 updated

Findings / Complaints / Remedies

No.	Findings	Remedy / Repair	Inspector

Place: _____ Date: _____ Stamp: _____ Signature: _____

Edition: Dec. 2001

Revision - 1 (TB 8011)

Page 14-12

Prepared: 01.12.01	Verified: <i>W. Kasper</i>	Complies:
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Change of Ownership

In a case of change ownership please complete this form and send it back to the manufacturer's address below. This is the only practicable way to give you immediate notice of future technical changes, should they become necessary.

Type: LS 8-a Serial No.: _____

Registration Signs: _____

Address of new owner

Address of former owner

Send to: Rolladen Schneider
Flugzeugbau GmbH
Mühlstraße 10
D-63323 Egelsbach

Telephone +49 (0)6103-403660
Fax +49 (0)6103-45526

Edition: April 1999

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Page 15-1

Erstellt: 07.10.99 <i>Heucke</i>	Geprüft: <i>Wapka</i>	Complies:
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