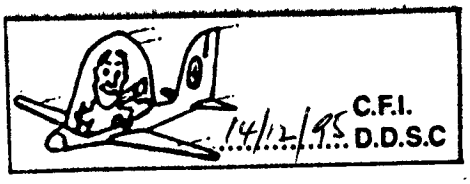

FLIGHT MANUAL FOR THE LS7 SAILPLANE

This Manual should be carried in the sailplane at all times.

REGISTRATION : _____

SERIAL NUMBER : _____

Manufacturer Rolladen Schneider Flugzeugbau GmbH
Mühlstraße 10
D-6073 EGELSBACH
Fed. Rep. of Germany
Tel.06103-4126
Teletex 17 6103985=LSFLUG
Fax 06103-45526

OWNER

Published: Apr. 15, 1989

LBA-approved:

23. April 1989

In order that the manufacturer can continue to provide essential service information, any changeof ownership should be notified to the manufacturer immediately.

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

Erstellt:	Geprüft:

(7FET)

DO NOT REMOVE FROM CLUB

0.1 LOG OF REVISIONS

Revision No.	Pages affected	Description	LBA-approval signature	Date
1	Chapters 0, 2 to 5	LBA-approval included		08. April 1991
2	0-1, 0-2 4-7	Tail fin tank volume conversion corrected		08. April 1991

LS7 Manuals can be ordered from:
ROLLADEN-SCHNEIDER Flugzeugbau GmbH
Mühlstrasse 10
D-6073 Egelsbach
Federal Republic of West Germany

Erstellt: 25.2.91 Genrich	Geprüft: 25. FEB. 1991 Klapka

0.2 LIST OF EFFECTIVE PAGES

0-1	Feb. 25, 1991	7-1	Apr. 15, 1989
0-2	Feb. 25, 1991	7-2	Apr. 15, 1989
0-3	Aug. 30, 1989	7-3	Apr. 15, 1989
		7-4	Apr. 15, 1989
1-1	Apr. 15, 1989	7-5	Apr. 15, 1989
1-2	Apr. 15, 1989		
		8-1	Apr. 15, 1989
2-1	Aug. 30, 1989	8-2	Apr. 15, 1989
2-2	Aug. 30, 1989	8-3	Apr. 15, 1989
2-3	Aug. 30, 1989	8-4	Apr. 15, 1989
2-4	Aug. 30, 1989	8-5	Apr. 15, 1989
2-5	Aug. 30, 1989		
2-6	Aug. 30, 1989		
2-7	Aug. 30, 1989		
2-8	Aug. 30, 1989		
3-1	Aug. 30, 1989		
3-2	Aug. 30, 1989		
4-1	Aug. 30, 1989		
4-2	Aug. 30, 1989		
4-3	Aug. 30, 1989		
4-4	Aug. 30, 1989		
4-5	Aug. 30, 1989		
4-6	Aug. 30, 1989		
4-7	Feb. 25, 1991		
4-8	Aug. 30, 1989		
4-9	Aug. 30, 1989		
4-10	Aug. 30, 1989		
4-11	Aug. 30, 1989		
4-12	Aug. 30, 1989		
4-13	Aug. 30, 1989		
4-14	Aug. 30, 1989		
4-15	Aug. 30, 1989		
4-16	Aug. 30, 1989		
5-1	Aug. 30, 1989		
5-2	Aug. 30, 1989		
6-1	Apr. 15, 1989		
6-2	Apr. 15, 1989		

Erstellt: 25.2.91 Heuck	Geprüft: 25. FEB. 1991 Schapka

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0.3 TABLE OF CONTENTS

Erstellt: 08. SEP. 1989	Geprüft: -5. SEP. 1989

(7FE0)

SECTION 1

1.1 INTRODUCTION

This sailplane Flight Manual has been prepared to provide pilots and instructors with information for the safe and efficient operation of the LS7 sailplane.
This manual includes the material required to be furnished to the pilot by JAR Part 22. It also contains supplementary data supplied by the sailplane manufacturer.

The LS7 is a high performance sailplane, not a basic trainer. However excellent its design, construction, performance and handling qualities, flying it requires a skilled pilot, who observes the limitations and recommendations set out in this manual.

1.2 CERTIFICATION BASIS

This type of sailplane has been approved by Luftfahrt-Bundesamt (LBA) Braunschweig in accordance with JAR Part 22 including amendments 22/86/1 and the Type Certificate No. 04.375, Edition 1 has been issued Feb. 7,1989.
Category of Airworthiness: Utility

1.3 WARNINGS, CAUTIONS AND NOTES

The following definitions apply to warnings, cautions and notes used in the flight manual.

WARNING — Any operating procedure, practice or condition which, if not strictly complied with, may result in personal injury or loss of life.

CAUTION — Any operating procedure, practice or condition which, if not strictly complied with, may result in damage to the aircraft or equipment.

Note — Any operating procedure, practice or condition which is essential to emphasize.

1.4 DESCRIPTIVE DATA

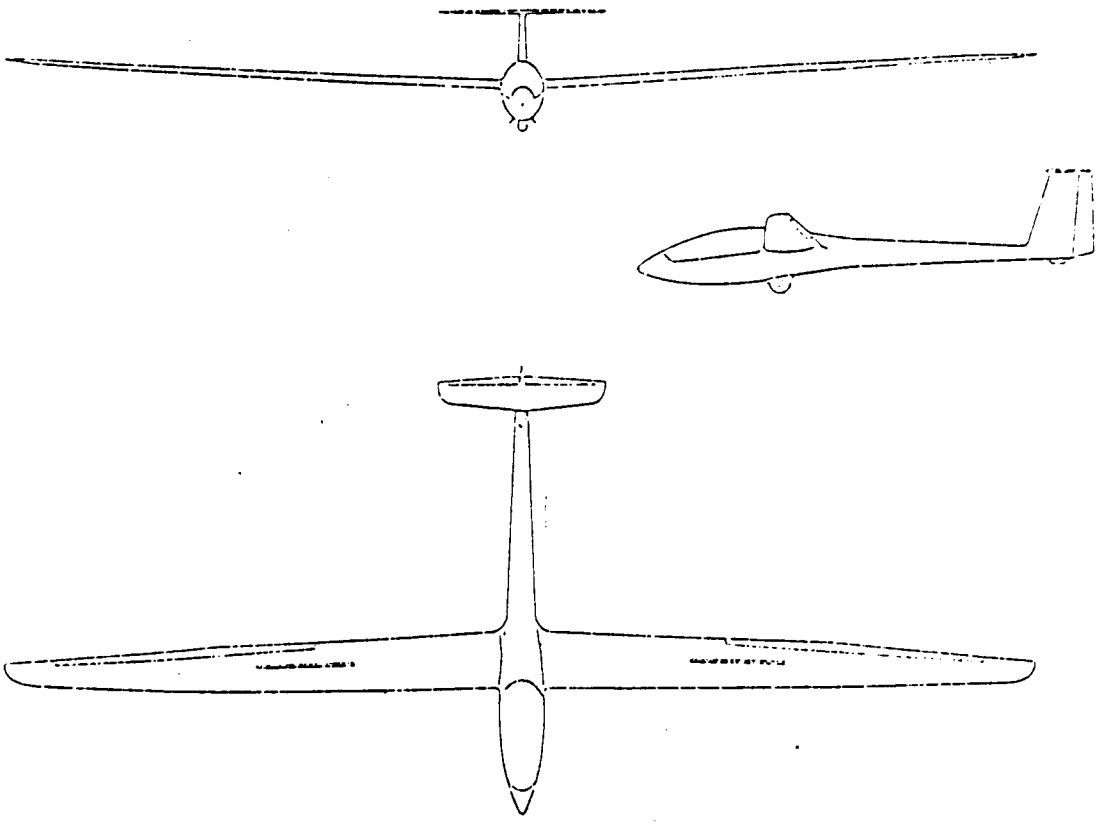
The LS7 is a standard class single seater sailplane with carbon fibre wing shell, T-tail, wing and optional vertical tail fin water ballast systems, retractable and sprung landing gear and upper wing surface air brakes.

This sailplane has been produced using the latest technology of industrial fibre design (Glass, Aramid and Carbon fibres).

It is designed for training flights and competition flights - high performance combined with excellent handling characteristics.

Wing span	15 m (49.21 ft)
Length	6.66 m (21.84 ft)
Height	1.33 m (4.36 ft)
MAC	0.649 m (2.13 ft)
Wing area	9.73 m² (104.8 sq.ft)
Wing aspect ratio	23.1
Maximum gross weight	486 kg (1071 lbs)
Maximum wing loading	50 kg/(m*m) (10.2 lbs sq.ft)
Airfoil	Wortmann modified

1.5 THREE VIEW DRAWING



SECTION 2

2.1 INTRODUCTION

Section 2 includes operating limitations, instrument markings, and basic placards necessary for safe operation of the sailplane, its standard systems and standard equipment.
The limitations included in this section have been approved by LBA (Luftfahrt-Bundesamt Braunschweig).

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2.2 AIRSPEED

Airspeed limitations and their operational significance are shown below:

	Speed	IAS km/h	IAS kts	IAS MPH	Remarks
VNE	Never Exceed speed	270	146	168	Do not exceed this speed in any operation and do not use more than one third of control deflections. from sea level to 2000 m (6500 ft) MSL
		257	139	160	from 2000 m(6500 ft) to 3000 m(9800 ft) MSL
		244	132	152	from 3000 m(9800 ft) to 4000 m(13100 ft) MSL
		219	118	136	from 4000 m(13100 ft) to 6000 m(19700 ft) MSL
		195	105	121	from 6000 m(19700 ft) to 8000 m(26200 ft) MSL
		173	93	107	from 8000 m(26200 ft) to 10000 m(32800 ft) MSL
VRA	Rough air speed	190	103	118	Do not exceed this speed except in smooth air and then only with caution. Air movements in lee-wave rotors, thunderclouds, visible whirlwinds, or over mountain crests are to be understood as rough air.
VA	Manoeuvering speed	190	103	118	Do not make full or abrupt control movement above this speed, because under certain circumstances loads due to manoeuvering, gusts and control surface deflections may exceed design limits.
VW	Maximum Winch Launching speed	140	76	87	Do not exceed during winch- or auto-tow-launching
VT	Maximum Aero Tow speed	190	103	118	Do not exceed during aero tow
VL	Maximum Landing Gear operating	270	146	168	Do not exceed during winch- or auto-tow-launching
	Air brakes	270	146	168	

WARNING: When flying at altitude, the lower limit IAS is always authoritative.

2.3 AIRSPEED INDICATOR MARKINGS

Airspeed indicator markings and their colour code significance are shown below:

Marking	IAS value or range	Significance
Green arc	73 - 190 km/h 39 - 103 kts 45 - 118 MPH	Normal operating range
Yellow arc	190 - 270 km/h 103 - 146 kts 118 - 168 MPH	Manoeuvers must be conducted with caution only in smooth air
Red line and VNE up to 2000 m/6500 ft	270 km/h 146 kts 168 MPH	Never exceed from MSL up to 2000 m / 6500 ft above MSL flying altitude
Red line and VNE up to 3000 m/9800 ft	257 km/h 139 kts 160 MPH	Never exceed from 2000 m / 6500 ft above MSL up to 3000 m / 9800 ft above MSL flying altitude
Red line and VNE up to 6000 m/19700ft	219 km/h 118 kts 136 MPH	Never exceed from 3000 m / 9800 ft above MSL up to 6000 m / 19700 ft above MSL flying altitude
Red line and VNE up to 10000m/32800ft	173 km/h 93 kts 107 MPH	Never exceed from 6000 m / 19700 ft above MSL up to 10000 m / 32800 ft above MSL flying altitude
Yellow triangle	90 km/h 49 kts 56 MPH	Minimum recommended approach to landing speed without water ballast

For an example of airspeed indicator marking see page 2-7.

2.4 MASS (WEIGHT)

Maximum take-off mass with water ballast ..... 486 kg (1071 lbs)
without water ballast ..... 384 kg (847 lbs)

Maximum landing mass ..... 486 kg (1071 lbs)
Maximum mass of all non-lifting parts ..... 235 to 249 kg (518-549 lbs)

Value must be determined according to table in Maintenance Manual, chapter 2, related to empty weight and empty weight C.G. position.
The term "non-lifting parts" includes the following: fuselage inclusive permanently fitted equipment, canopy and main pins plus maximum cockpit load. Tail fin water ballast, if system is installed, is not counted for nonlifting parts, but for maximum weight.

Maximum wing water ballast mass, depending on loading conditions and ballast bags size .... max. 100 kg (220 lbs) or 170 kg (375 lbs)
Loading instructions see page 4-8 or 4-10.

If installed:
Vertical tail fin water ballast mass, depending on wing water ballast loading ..... maximum 5.5 kg (12 lbs)
Loading instructions see page 4-12.
When the tail fin tank is combined with a tail battery receptacle, maximum tail fin water ballast mass is ..... 4.1 kg (9 lbs)

Maximum mass in Baggage Compartment ..... 5 kg (11 lbs)
Loading instructions see page 4-6.

Maximum mass of all instrument panel installations ..... 6.7 kg (14.7 lbs)

WARNING: If C.G. weighing had been performed with a vertical tail fin battery, see entry on page 6-2, then the battery must always be carried in the vertical tail fin.

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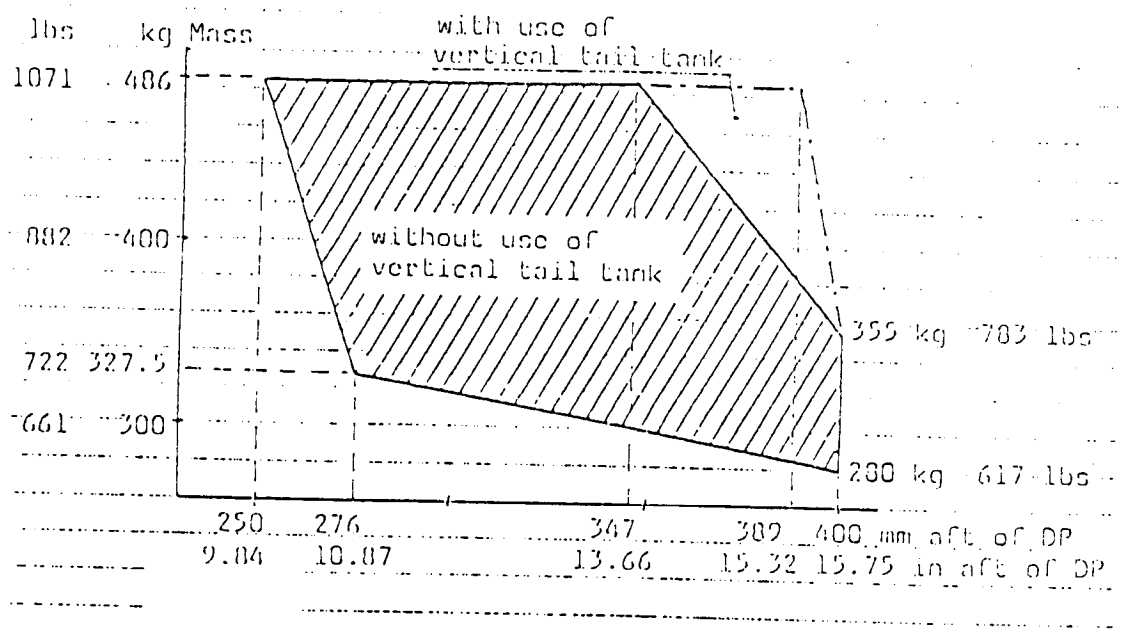
2.5 CENTER OF GRAVITY LIMITS

Position of C.G. in flight
Maximum allowable:
forward C.G. position ..... 250 mm (9.84 in) aft of DP

rearward C.G. position ..... 400 mm (15.75 in) aft of DP

Datum point (DP): leading edge of wing at root, when under side of fuselage boom placed horizontal.



WARNING: Vertical tail fin water ballast (if fitted) may only be used to compensate C.G. displacement due to wing water ballast. Permissible amounts see table page 4-12.

2.6 MANOEUVER LIMITS / CATEGORY OF AIRWORTHINESS

The LS7 sailplane is certified in the U (Utility) category according to JAR 22
Acrobatic manoeuvers not approved.
Cloud flying with water ballast not approved.

For Italy: Spins not approved.

2.7 FLIGHT LOAD FACTOR LIMITS

At 190 km/h (103 kts, 118 MPH) 5.3 G positive and 2.65 G negative.
At 270 km/h (146 kts, 168 MPH) 4.0 G positive and 1.5 G negative.

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2.8 CREW

Maximum Cockpit Load ..... maximum 120 kg (265 lbs)

The term "Cockpit Load" includes the following:
Pilot, parachute, baggage and temporary equipment.
Maximum cockpit load may be limited by mass of non-lifting parts.
See entry on page 6-2.

Minimum Cockpit Load for club use (recommended)

Pilot and parachute ..... 70 kg (154 lbs)
No baggage, no temporary equipment, no trim ballast

Pilot and parachute ..... 55 kg (121 lbs)
3 trim weights fitted, no baggage, no temporary equipment
One trim weight (2.5 kg, 6 lbs) corresponds to 5 kg (11 lbs) of pilot mass.

If the sailplane does not fly in a club, it may be trimmed for higher minimum cockpit load. See instructions in chapter 11 of Maintenance Manual.
For minimum cockpit load see entry on page 6-2 and placards.

2.9 KINDS OF OPERATION LIMITS

The LS7 sailplane is approved for Day-VFR. Minimum equipment see page 2-7.

Cloud flying only approved without water ballast (Applicable only for countries which permit cloud flying and when Minimum Equipment is approved for cloud flying, see inspector's entry in inspection certificate). Minimum equipment see page 2-7.

For USA only:
Night-VFR, IFR and Flight into known icing conditions are not approved.
Use of water ballast limited to non-freezing conditions.

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2.10 MINIMUM EQUIPMENT LIST

1. Airspeed Indicator, scale 50-300 km/h (27-162 kts, 31-186 MPH)

   Colour marking see page 2-3 and example below.
   Approved types see Master Equipment List.
   Pressure pick-ups: Vertical tail fin pitot and lower forward fuselage side statics.

2. Altimeter in m (For Italy) or ft
3. Four piece seat belt harness
4. Magnetic compass (For USA and Canada)

   See Master Equipment List in Maintenance Manual

5. Back cushion or parachute in compressed form should not be thinner than 80 mm to 100 mm (3 to 4 in).
6. Checklist, type placard, data and loading placard, operating placards. For placards see pages 2-8 and Maintenance Manual chapter 10.
7. Flight Manual LS7 .
8. Remote indicating thermometer, when tail fin water ballast system is fitted. Approved types see Master Equipment List in Maintenance Manual.

Additionally for cloud flying:
Turn and Bank indicator
Compass, compensated in sailplane (Not for USA and Canada)
Variometer, range at least ±10 m/s (1970 ft/min, 19.4 kts)

Example of airspeed indicator colour marking :

2.11 BREAK AWAY LINKS FOR AEROTOW, WINCH LAUNCH AND AUTO TOW

Maximum break away link in tow cable
for winch launch and auto tow: 825 kg (1819 lbs)
for aero tow: 550 kg (1212 lbs)

Recommended: for winch launch/
auto tow: Tost weak link No.3, colour code red, rated break away load 750 kg (1650 lbs)
for aero tow: Tost weak link No.5, colour code white, rated break away load 500 kg (1100 lbs)

MINIMUM AERO TOW CABLE LENGTH: 30 m (100 ft)
Recommended tow cable length up to 80 m (263 ft)

2.12 OPERATING PLACARDS FOR LIMITATIONS

For positions of placards see page 7-2.

Minimum Cockpit Load kg

Weight Limitations		kg	lbs
Pilot Weight incl. parachute	Max.		
	Min.		

Lighter pilots must compensate lack of weight as suggested in flight manual.

Type LS7	Serial No.		
AIRSPEED LIMITS (IAS)	km/h	MPH	kts
Never Exceed (VNE)	270	168	146
In Rough Air (VB)	190	118	103
Manoeuvering (VA)	190	118	103
Aero Tow (VT)	190	118	103
Winch Tow (VW)	140	87	76
Dive Brakes	270	168	146
Landing Gear (VL)	270	168	146

Maximum Weight 486 kg (1071 lbs)
including water ballast.
No aerobatic maneuvers approved.
BATTERY in fin
in Baggage Compartment

Maximum Baggage Weight 5 kg or 11 lbs
(Soft items only)

Erstellt: 08. SEP. 1989 Hanneke	Geprüft: -8. SEP. 1989 Schaefer

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SECTION 3

3.1 INTRODUCTION

Section 3 provides checklist and amplified procedures for coping with emergencies that may occur. Emergencies caused by sailplane malfunction are extremely rare if proper preflight inspections and maintenance are practiced.
However, should an emergency arise, the basic guidelines described in this section should be considered and applied as necessary to correct the problem.

3.2 EMERGENCY CANOPY RELEASE AND EXIT

Canopy locks	- Pull both handles open to stops. Right handle operates emergency release, therefore longer travel as on left handle
Canopy	- Push off, assisted by lifting panel
Seat harness	- Open
Exit	- Lift with elbows over cockpit rim and push yourself away from the sailplane to avoid the tail

3.3 STALL RECOVERY

Warning	- Slight tail shudder prior to entry
Aileron	- Effectiveness reduced by about 50%
Sink rate	- Increases considerably
Termination	- Stick forward to neutral

Stalling speed at maximum weight (480 kg, 1071 lbs), straight flight, airbrakes retracted :

67 km/h 36 kts 42 MPH

When during stalled flight the angle of incidence is increased considerably by further "pulling", then - depending on C.G. position - spinning may result from asymmetric stall.

3.4 SPIN RECOVERY

Rudder	- Opposite to spin rotation until rotation stops
Elevator	- Neutral or slightly forward
Aileron	- Neutral
Smooth pull-out	
Altitude loss during recovery	- About 100 m (300 ft)

3.5 SPIRAL DIVE RECOVERY

Spiral dive may occur when the sailplane terminates spinning on its own and not by pilot's action

Elevator	- Pull cautiously
Rudder	- Opposite to dive rotation
Aileron	- Opposite to angle of bank

3.6 OTHER EMERGENCIES

3.6.1 LIMITATION OF HIGH SPEED FLIGHT

If there are indications while flying under large cloudbanks that the maximum permissible rough air speed (VA) will be exceeded, air brakes should be extended carefully before 190 km/h (103 kts, 118 MPH) is reached.
In emergencies, air brakes can also be extended up to a speed of 270 km/h (146 kts, 168 MPH). During unlocking airbrakes will suddenly be sucked open, resulting in negative acceleration for a short time.

Once extended, the air brakes can only be retracted completely at speeds below 240 km/h (130 kts, 149 MPH): spring loaded covers stay open due to aerodynamic suction.

When air brakes are extended during descent after high altitude wave flights, a speed of 190 km/h (103 kts, 118 MPH) should not be exceeded because of possible severe turbulence.

3.6.2 RAIN

During rain expect considerable decrease of performance. Increase approach to landing speed at least by 10 km/h (5 kts, 6MPH) over normal approach speed because stall speed increases and effectivity of controls decreases. Open canopy window to increase visibility.

3.6.3 INADVERTENT FREEZING / ICING

Water ballast in wings and tail fin

Water ballast must be dumped below +5° C (41° F), see built in thermometer near landing gear handle.

Water ballast in wings only

Do not dump below 0° C (32° F).
The rear fuselage may collect ice or the vertical tail fin valve may be frozen solid. Both cases can result in very dangerous rearward C.G. displacement. Additionally, one wing valve may be frozen solid.
Therefore: For prolonged flights below 0° C (32° F) use no waterballast or add commercial antifreeze solution.

ICING CONDITIONS: Move control surfaces continually to avoid freezing solid. Open window to increase visibility.

Erstellt: 08. SEP. 1989 Jeschke	Geprüft: 08. SEP. 1989 Schaefer

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SECTION 4

4.1 INTRODUCTION

Section 4 provides checklist and amplified procedures for the conduct of normal operation.

4.2 RIGGING AND DE-RIGGING

1. Before extending landing gear check for adequate ground clearance
2. Clean and grease all pins and matching bushes including main pins
3. Position control stick into zero aileron-deflection position
4. Insert left spar end into fuselage, aileron must be slightly down and watch for angle of dihedral
5. Insert right spar end into fuselage, aileron must be slightly down and watch for angle of dihedral

WARNING: When ailerons are deflected upward during rigging, then the automatic aileron connector prevents rigging. Do not use brute force.

IMPORTANT NOTE: The aileron sandwich is pressure sensitive, handle carefully!

6. Insert main pins, when bushes are lined up correctly
7. Secure main pins by placing handles behind spring loaded pegs
8. Insert battery into vertical tail fin (if weighing was performed in this configuration, see Data Placard in cockpit or page 6-2), connect to system and check operation.
   The tail fin battery must be equipped with an appropriate main fuse
9. Check forward horizontal tail attachment for ball being fixed
   WARNING: When ball is loose refer to page 8-5
10. Install horizontal tail, span until free from play and secure with slotted nut against tapered pins using a suitable coin until red marking on attachment bracket is invisible
11. Install total energy tube, mount battery into baggage compartment (if weighing was performed in this configuration) and temporary equipment (barograph etc.)
14. Connect automatic parachute ripcord to red marked portion of main bulkhead using special loop only
15. Seal wing fuselage intersection by taping upper and lower sides and cutout on upper horizontal tail fin
16. Fill wing water ballast tanks (for loading instructions see also pages 4-6 or 4-10) and check: a) opening of dump valves?
17. Fill vertical tail fin water ballast tank (if fitted) in relation to wing water ballast weight (for loading instructions see also page 4-12) and check proper dumping: a) tail fin system starting to dump before wing system
    b) wing system completely water tight?
18. Perform Daily Inspection

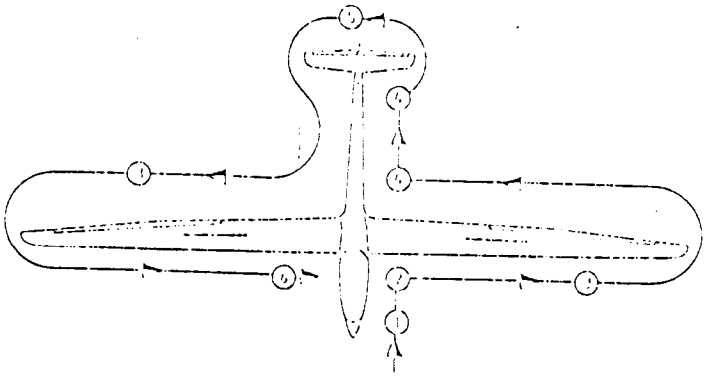
DE-RIGGING

Reverse assembly sequence. Air brake system should be unlocked to avoid permanent pressure on flexible covers and resulting possible deformations (overcenter in wing).

Erstellt: 08. SEP. 1989 Jeucke	Geprüft: 8. SEP. 1989 Klapka

4.3 DAILY INSPECTION

The Daily Inspection according to the following diagram and related checklist must be performed each day and is essential for flight safety.



1 Forward Fuselage
- Forward static pressure ports for clogging
- Function of nose hook, if fitted

2 Landing gear
- Recommended tyre pressure 3 to 3.5 bar (43 to 50 psi) When using water ballast increase up to 4 bar (58 psi)
- Slip mark and tyre condition
- C.G. hook manual and automatic operation working properly
- Water drain orifices in front and behind of landing gear box free from clogging

3 Wings
- Water drain orifices at root and tip free from clogging
- Condition, gelcoat- or structural damage, cracks
- Attachment
- Air brakes for proper function and locking
- Ailerons for unobstructed movement and free from play

IMPORTANT NOTE: The aileron sandwich is pressure sensitive, handle carefully!

4 Fuselage
- Condition, gelcoat- or structural damage, cracks
- Rear static ports at fuselage boom free from clogging
- Recommended tail wheel pressure, if fitted, 2.5 to 3.5 bar (36 to 50 psi)
- Water drain orifice in front of tail skid or tail wheel free from clogging
- Tail skid, if fitted, for proper adhesion

5 Tail Unit
- Condition, gelcoat or structural damage, cracks
- Total energy port at upper end of vertical tail fin leading edge and pitot pressure port below total energy port free from clogging
- Charged rear battery connected, if used
- Amount of vertical tail fin water ballast, if fitted, in correct relation to amount of wing water ballast

Erstellt: 08. SEP. 1989	Geprüft: -8. SEP. 1989

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4.3 DAILY INSPECTION continued

5 Tail Unit continued
- Vertical tail fin tank, if fitted, absolutely water tight
- Horizontal tail fin: no pressure marks permitted in center portion
- Horizontal tail properly installed and free from play
- Movement of tail control surfaces unobstructed and free from play

6 Cockpit
- Canopy cleaned, if required
- Canopy locking and emergency release working properly (Be careful when testing emergency release, the canopy opening system lifts the canopy immediately. Use a helper for reinstallation)
- Main pins properly secured
- Proper connection of aileron system connection: With control stick in center position ailerons must be flush with trailing edge
- Charged battery fixed in baggage compartment and connected
- Thermometer near landing gear handle for function (only existent when a vertical tail fin tank is fitted)

4.4 PREFLIGHT CHECK

Daily inspection	- performed
Control system	- check functions using a helper
Water ballast system	- check for leaks, if filled
	- no leaks in wing system allowed, when using tail fin ballast also, to avoid unintentional rearward C.G. displacement
	- check proper dumping: tail fin system starts dumping before wing system
Total energy tube	- fitted and connection properly sealed
Weight and Balance, especially Minimum and Maximum Cockpit Loads, trim weights and tail fin ballast amount	- checked
Altimeter	- set
Other instrumentation	- checked, normally indicating zero
Radio	- operational check
Backrest	- adjusted and locking checked
Rudder pedals	- adjusted
Papers (C of A, logbook etc.)	- complete and valid
Landing gear locking	- without play
Wheel brake	- check operation
Before take off	- perform cockpit checklist procedure

Erstellt: 06. SEP. 1989 Leuchte	Geprüft: -6. SEP. 1989 Schapka

4.5.1 ADJUSTMENT OF RUDDER PEDALS

- Possible in flight or on the ground
- Release pressure on pedals
- Unlock pawl by pulling black pedal release handle
- Forward adjustment: push pedals forward with feet into desired position and lock
- Rearward adjustment: pull pedals with release handle into desired position and lock

4.5.2 ADJUSTMENT OF BACKREST

Adjust backrest in such way that lower spine end is well supported and not bent.

Lower bracket adjustable only on the ground, allows use of various types of parachutes

- Remove screw using suitable coin
- Insert two locating pegs into desired position
- Secure with screw

Slope adjustment possible in flight or on the ground

Forward adjustment:

- Slacken shoulder straps
- Release pressure from backrest
- Push ratchet at right cockpit rim forward and outward into desired position and lock
- Check proper locking of ratchet
- Retighten shoulder straps

Rearward adjustment:

- Release pressure from backrest
- Push ratchet at right cockpit rim slightly forward and outward
- Push backrest into desired position and lock
- Check proper locking of ratchet
- Tighten shoulder straps
- The backrest may be removed for huge pilots, then a headrest according to drawing 3BR-101 must be fitted

WARNING: When the backrest is removed for huge pilots, then the guide tube must also be removed. Otherwise it may obstruct an emergency exit.

4.5.3 AUTOMATIC PARACHUTE RIPCORD

- Attach to red main bulkhead portion at left rear of pilot
- Use special loop only

4.5.4 LANDING GEAR

- Extension or retraction permitted over whole approved speed range
- Handle in forward position locked - gear up
- Handle in rearward position locked - gear down
- When using the C.G. hook, retract gear after releasing tow cable, because C.G. hook is fitted to gear fork

Erstellt: 08. SEP. 1989 Jeucke	Geprüft: -8. SEP. 1989 Schapka

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4.5.5 WHEEL BRAKE

- Press rudder pedals with both feet to activate wheel brake
- Wheel brake is an emergency brake, therefore it should be used sparingly because of high wear rate of linings

4.5.6 TRIM SYSTEM

Trim locking lever at control stick	- pull to free trim knob
Trim knob at left cockpit side	- forward for nose down
	- rearward for nose up
Fix trim setting	- release locking lever
Indication of trim setting	- indicated by position of trim knob relative to neutral mark

4.5.7 BAGGAGE COMPARTMENT

Baggage compartment should be used for soft and light materials which would not obstruct the pilot after deceleration or injure the pilot in crash landings.
For permanent installation of equipment see Maintenance Manual, chapter 11.

4.5.8 BALANCING OF PILOTS WITH INSUFFICIENT WEIGHT

3 trim weights can be fitted to a threaded rod in front of rudder pedals and secured by knurled nut.

One trim weight of 2.5 kg (5.5 lbs)
corresponds to 5 kg (11 lbs) of pilot weight

4.5.9 WATER BALLAST

- both wings together hold about 170 liters (44.9 US gallons, 37.4 Imp. gallons
  optionally, tanks of about 100 liters (26.42 US gal., 22 Imp. gal.) may be fitted. For size of ballast tanks see entry on page 6-2.
- one tank and one valve per wing
- maximum permissible water ballast depends on loading conditions, see pages 4-8 or 4-12 for water ballast loading instructions
- use as clean water as possible to avoid damage of sealing rings by foreign matter

FILLING:

- open dump valve by shifting lever on right cockpit rim backwards
- suck residual air from left water bag through dump orifice on under side of wing using connection hose, close dump valve before terminating sucking, to avoid air entering into bags again
- residual air may reduce amount of water

WARNING: residual air may create undue pressure during high altitude flights above 3000 m (10000 ft)

WARNING: never use more than 0.1 bar of water pressure (funnel max. 1 m (3.3 ft) above wing) because of possible damage of structure

- lay left wing down for filling
- connect funnel to dump orifice on under side of left wing
- fill half of desired total amount of water using funnel

Erstellt: 08. SEP. 1989 Jeucke	Geprüft: -8. SEP. 1989 Klapka

(7FE4)

4.5.9 WATER BALLAST continued

- when the tail fin tank is going to be used, the wing filling funnel must stay in position to avoid consequent leaking or air entering again
- fill tail fin tank (if fitted):
  - connect tube of tail fin funnel with wire meshing to dumping tube just inside lower right rudder cut-out with rudder deflected to the left and place funnel on top of the rudder.
  - fill tail fin tank via funnel in relation to wing water amount, see tables page 4-10 to 4-12.
  - Markings on inside of translucent right rudder gap seal correspond to 0.5 Liter (0.13 US gallons, 0.11 Imp. gallons).
  - use water level in funnel tube relative to markings to determine correct amount in relation to wing amount
  - the upper red marking corresponds to maximum amount of tail fin water ballast, 5.5 Liters (1.45 US gallons, 1.21 Imp. gallons) or 4.1 Liters (1.08 US gal., 0.90 Imp. gal.) for the combination of tail fin tank with tail fin battery compartment
- when left wing and tail fin tanks are filled, close dump valves of wings (and tail fin tank) by shifting cockpit lever forward
- tail fin valve seals filling tube and tank in open position, but tank only in closed position. Therefore, after closing valve, remove tail fin funnel immediately to avoid seeping of water from funnel tube into rear fuselage
- to open right wing valve through baggage compartment use knurled nut, turn 10 turns counterclockwise
- after sucking residual air out of bag let a helper keep the wing tip on the ground and fill the same amount as in left wing
- close right wing valve with knurled nut, turn clockwise against stop
- see also icing conditions in Emergency Procedures, Chapter 3

WARNING: When amount of water ballast in wings is not equal, this may favour tendencies to ground loop during take off

WARNING: Check proper dumping - tail fin system must start dumping before wing system to avoid C.G. shifting backwards

- use of water ballast limited to non-freezing conditions, see also Flight Manual page 2-6.

DUMPING:

- open valve by shifting lever backwards
- 10 liters (2.6 US gallons, 2.2 Imp. gallons) will be dumped in approx. 12 seconds
- if aileron stick force is needed to maintain level flight after dumping, this may indicate unequal dumping
- to avoid ground looping in case of unequal dumping apply aileron in the direction as noticed before shortly after touchdown

WARNING Check thermometer (if tail fin tank is fitted) regularly during flight. Dump water at 5° Centigrade (41° F) to ensure proper dumping before tail fin valve freezes solid. This necessary measure of safety may only be surpassed if enough commercial antifreeze solution has been added

Erstellt: 25.2.91 Leuke	Geprüft: 25. FEB. 1991 Klapka

4.5.9a MAXIMUM WATER BALLAST (wing tank only, no tail tank)

Maximum approved capacity per wing 85 kg (187 lbs) = 170 kg (375 lbs) total
Optional capacity per wing 50 kg (110 lbs) = 100 kg (220 lbs) total

Table provides maximum total water ballast weight in relation to empty weight and cockpit load. Baggage and temporary equipment reduce maximum water ballast weight accordingly.

For values in lbs see following page !

Cockpit load Pilot+parachute +equipment (kg)	Empty weight (kg) 240	245	250	255	260	265	270	275	280	285
70	170	170	166	161	156	151	146	141	136	131
75	170	166	161	156	151	146	141	136	131	126
80	166	161	156	151	146	141	136	131	126	121
85	161	156	151	146	141	136	131	126	121	116
90	156	151	146	141	136	131	126	121	116	111
95	151	146	141	136	131	126	121	116	111	106
100	146	141	136	131	126	121	116	111	106	101
105	141	136	131	126	121	116	111	106	101	96
110	136	131	126	121	116	111	106	101	96	91
115	131	126	121	116	111	106	101	96	91	86
120	126	121	116	111	106	101	96	91	86	81

Example: When empty weight is 265 kg (584 lbs) and pilot and parachute weight is 110 kg (242 lbs), maximum permissible total water ballast weight is 111 kg (245 lbs).

When the optional tail fin tank is fitted, see ballast loading instructions pages 4-10 to 4-13.

Erstellt: 08. SEP. 1989	Geprüft: 8. SEP. 1989

4.5.9a MAXIMUM WATER BALLAST (wing tank only, no tail tank)

Maximum approved capacity per wing 85 kg (187 lbs) = 170 kg (375 lbs) total
Optional capacity per wing 50 kg (110 lbs) = 100 kg (220 lbs) total

Table provides maximum total water ballast weight in relation to empty weight and cockpit load. Baggage and temporary equipment reduce maximum water ballast weight accordingly.

For values in kg see preceding page !

Cockpit load Pilot+parachute +equipment (lbs)	Empty weight (lbs) 529	540	551	562	573	584	595	606	617	628
154	375	375	366	355	344	333	322	311	300	289
165	375	366	355	344	333	322	311	300	289	278
176	366	355	344	333	322	311	300	289	278	267
187	355	344	333	322	311	300	289	278	267	256
198	344	333	322	311	300	289	278	267	256	245
209	333	322	311	300	289	278	267	256	245	234
220	322	311	300	289	278	267	256	245	234	223
231	311	300	289	278	267	256	245	234	223	212
242	300	289	278	267	256	245	234	223	212	201
254	289	267	267	256	245	234	223	212	201	190
265	278	267	256	245	234	223	212	201	190	179

Example: When empty weight is 265 kg (584 lbs) and pilot and parachute weight is 110 kg (242 lbs), maximum permissible total water ballast weight is 111 kg (245 lbs).

When the optional tail fin tank is fitted, see ballast loading instructions pages 4-10 to 4-13.

Erstellt: 08. SEP. 1989 Geprüft: 08. SEP. 1989

(7FE4)

4.5.9b MAXIMUM WATER BALLAST
(Loading Instructions for wing and tail fin tank in use)

Maximum approved capacity per wing 85 kg (187 lbs) = 170 kg (375 lbs) total
Optional capacity per wing 50 kg (110 lbs) = 100 kg (220 lbs) total

Maximum tail fin tank capacity 5.5 kg (12 lbs)
Optional tail fin tank capacity 4.1 kg (9 lbs), when the tail fin tank is combined with a tail fin battery receptacle

Table provides maximum total water ballast weight in wing related to empty weight and cockpit load. For permissible tail fin ballast amount see table page 4-12. Baggage and temporary equipment reduce maximum water ballast weight accordingly.

4.5.9c MAXIMUM WATER BALLAST
(Loading plan for wing and tail fin tank in use)

For values in lbs see following page !

Cockpit load: Pilot+parachute +equipment (kg)	Empty weight (kg) 240	245	250	255	260	265	270	275	280	285
70	170	165	160	155	150	145	140	135	130	125
75	165	160	155	150	145	140	135	130	125	120
80	160	155	150	145	140	135	130	125	120	115
85	155	150	145	140	135	130	125	120	115	110
90	150	145	140	135	130	125	120	115	110	105
95	145	140	135	130	125	120	115	110	105	100
100	140	135	130	125	120	115	110	105	100	95
105	135	130	125	120	115	110	105	100	95	90
110	130	125	120	115	110	105	100	95	90	85
115	125	120	115	110	105	100	95	90	85	80
120	120	115	110	105	100	95	90	85	80	75

Example: When empty weight is 265 kg (584 lbs) and pilot and parachute weight is 110 kg (242 lbs), maximum permissible total water ballast weight is 105 kg (231 lbs).

Erstellt: 08. SEP. 1989 Leuke	Geprüft: -8. SEP. 1989 Schapka

(7FE4)

4.5.9c MAXIMUM WATER BALLAST
(Loading Instructions for wing and tail fin tank in use) continued

For values in kg see preceeding page !

Cockpit load Pilot+parachute +equipment (lbs)	Empty weight (lbs) 529	540	551	562	573	584	595	606	617	628
154	375	364	353	342	331	320	309	298	287	276
165	364	353	342	331	320	309	298	287	276	265
176	353	342	331	320	309	298	287	276	265	254
187	342	331	320	309	298	287	276	265	254	243
198	331	320	309	298	287	276	265	254	243	231
209	320	309	298	287	276	265	254	243	231	220
220	309	298	287	276	265	254	243	231	220	209
231	298	287	276	265	254	243	231	220	209	198
242	287	276	265	254	243	231	220	209	198	187
254	276	265	254	243	231	220	209	198	187	176
265	265	254	243	231	220	209	198	187	176	165

Example: When empty weight is 265 kg (584 lbs) and pilot and parachute weight is 110 kg (242 lbs), maximum permissible total water ballast weight is 105 kg (231 lbs).

Erstellt: 8. SEP. 1989	Geprüft: -8. SEP. 1989

(7FE4)

4.5.10 VERTICAL TAIL FIN WATER BALLAST LOADING INSTRUCTIONS

Filling ballast into the vertical tail fin must be exactly according to marks on inside of the translucent rudder seal and in relation to wing water amount, otherwise C.G. position may be outside approved range. See table below.

Each mark = 0.5 Liter (0.132 US gal., 0.11 Imp.gal) = 0.5 kg (1.1 lbs)

Maximum tail fin tank capacity 5.5 kg (12 lbs).
When the tail fin tank is combined with a battery receptacle, the maximum capacity is 4.1 kg (9 lbs)

Table provides maximum tail fin water ballast weight in relation to wing water ballast weight.

Filled amount of wing water ballast weight		Maximum allowable tail fin water ballast weight		Total maximum water ballast weight	
kg	lbs	kg	lbs	kg	lbs
26	57	1.0	2.2	27	59
39	86	1.5	3.3	40.5	89
52	114	2.0	4.4	54	119
65	143	2.5	5.5	67.5	149
78	149	3.0	6.6	81	178
91	201	3.5	7.7	94.5	208
104	229	4.0	8.8	108	238
117	258	4.5	9.9	121.5	268
130	287	5.0	11.0	135	298
143	315	5.5	12.0 (max.)	148.5	327
170	375	5.5	12.0 (max.)	175.5	387

WARNING: See also page 3-2, Inadvertent Freezing / Icing

Erstellt: 08. SEP. 1989 Heuck	Geprüft: -8. SEP. 1989 Schaefer

(7FE4)

4.5.11 WINCH LAUNCH or AUTO TOW

- adjust backrest properly (see page 4-5) to avoid sliding backwards during acceleration and steep climb
- tighten seat belt harness

- set trim system to neutral

- break away link in tow cable max. 825 kg (1819 lbs)

- ask winch operator to avoid too high acceleration. The higher the initial acceleration, the higher is the pitch up tendency

- use wheel brake during tightening of tow cable to avoid rolling over tow cable
- pronounced forward stick pressure is required during transition arc

- Minimum winch launch/auto tow speed:
  without water ballast ..... 90 km/h (49 kts, 56 MPH)
  with water ballast ..... 100 km/h (54 kts, 62 MPH)

- retract landing gear after tow, because C.G. hook is fitted to landing gear fork

4.5.12 AERO TOW

- adjust backrest properly and tighten seat belt harness

- set trim system to neutral position

- break away link in tow cable max. 550 kg (1100 lbs)

- use wheel brake during tightening of tow cable to avoid rolling over tow cable

- Minimum tow speed:
  without water ballast ..... 100 km/h (54 kts, 62 MPH)
  with water ballast ..... 120 km/h (65 kts, 75 MPH)

- when a nose hook is fitted, this must be used for aero tow

- when the C.G. hook is being used, retract landing gear after tow, because C.G. hook is fitted to landing gear fork

Erstellt: 08. SEP. 1989 Leucke	Geprüft: -8. SEP. 1989 Schapka

(7FE4)

4.5.13 FREE FLIGHT

- stalling speed (IAS) for straight and level flight

without water ballast			with maximum water		
km/h	kts	MPH	km/h	kts	MPH
54-62	29-33	34-39	65-67	35-36	40-42

- stalling speeds for banked flight

angle of bank	without water ballast			with maximum water		
degrees	km/h	kts	MPH	km/h	kts	MPH
20	56-64	30-35	35-40	67-69	36-37	42-43
30	58-67	31-36	36-41	70-72	38-39	43-45
40	62-71	33-38	38-44	74-77	40-41	46-48
45	64-74	35-40	40-46	77-80	42-43	48-50
50	67-77	36-42	42-48	81-84	44-45	50-52
60	76-88	41-47	47-54	92-95	50-51	57-59

Banked flight stalling speeds are calculated from straight flight data.

- during circling flight (thermalling) trim stick forces to zero
- best glide angle between 95 and 105 km/h (52-57 kts, 59-65 MPH)
- high speed flight up to 190 km/h (103 kts, 118 MPH):
  - trim stick forces to zero
- high speed flight between 190-270 km/h (103-146 kts, 118-168 MPH)
  - avoid abrupt manoeuvers
- check speed indication regularly to avoid exceeding limit values

WARNING: observe airspeed limits versus altitude (see page 3-2)

WARNING: when flying with empty water tanks, leave dump valve in open position to avoid pressure built up inside tanks at altitude

WARNING: Check thermometer (if tail fin tank is fitted) regularly during flight. Dump water at 5° Centigrade (41° F) to ensure proper dumping before tail fin valve freezes solid. This necessary measure of safety may only be surpassed if enough commercial antifreeze solution has been added

Erstellt: 18. SEP. 1989	Geprüft: 18. SEP. 1989

(7FE4)

4.5.14 HIGH ALTITUDE FLIGHTS

Increasing altitude yields higher true airspeed than indicated airspeed and this difference increases with increasing altitude.

This does not influence loads on the structure, which means that colour markings on airspeed indicator are valid unless limited by red lines.

However, as flutter depends on true airspeed, this should never be above 270 km/h IAS (146 kts, 168 mph) up to 2000 m (6500 ft) above MSL.

Using the table on page 2-2, maximum permissible airspeeds depending on altitude, the pilot is able to avoid flying faster than true airspeed of 270 km/h CAS (146 kts, 168 mph).

Example: Indicated airspeed of 219 km/h (118 kts, 136 mph) at 6000 m (19700 ft) altitude correspond to 270 km/h (146 kts, 168 mph) true airspeed.

4.5.15 SIDESLIP

- Sideslip speed range: up to VA= 190 km/h (103 kts, 118 mph)
- During sideslip rudder control force decreases to almost zero force.
- For a straight and steady sideslip 100% rudder and between 50 to 75% aileron deflection are necessary.
- Degradation in airspeed system goes down to zero airspeed indication. Depending on airspeed indicator, negative values may be indicated. (Vertical tail fin pitot and forward fuselage side statics used).

4.5.16 LANDING

- extend landing gear in time and lock (right hand gear handle)
- always extend landing gear, especially in case of an emergency outlanding.
  Only the sprung landing gear absorbs much landing impact energy.
- water ballast should normally be dumped prior to landing (For possible unequal dumping see page 4-7)

WARNING: minimum approach speed with air brakes fully extended:

without water ballast	not below 90 km/h (49 kts, 56 mph)
with water ballast	not below 100 km/h (54 kts, 62 mph)

- air brakes allow control of glide angle within wide limits.

WARNING: minimum speed increases
with airbrakes extended, by about 10km/h, (5 kts, 6 mph)
with rain and airbrakes extended by about 20 km/h (10 kts, 12 mph)

- side slipping is not necessary to control glidepath.
  As extending of air brakes makes the LS7 nose heavy, side slipping with air brakes extended and forward C.G. positions is not recommended, because of resultant unnecessarily high approach speeds

Erstellt: 08. SEP. 1989 Kaucke	Geprüft: 08. SEP. 1989 Schaefer

(7FE4)

4.5.17 FLIGHT IN RAIN

During rain expect considerable decrease of performance. Increase approach to landing speed at least by 10 km/h (5 kts, 6 mph) over normal approach speed because stall speed increases and effectivity of controls decreases.

Open canopy window to increase visibility.

4.6 POSTFLIGHT CHECK

Electrical instruments	- switch off
Battery	- recharge, if necessary
Insects and dust	- remove using water, sponge and chamois leather (See also chapter 8, Cleaning and Care)
Air brake boxes	- check if moisture has accumulated and remove with sponge
Water ballast system	- check proper dumping
Air brakes	- unlock

For Cleaning and Care see Chapter 8.

Erstellt: 08. SEP. 1989	Geprüft: -8. SEP. 1989

(7FE4)

SECTION 5

5.1 INTRODUCTION

Section 5 provides approved data for airspeed calibration, stall speeds and take off performance and non-approved additional information.

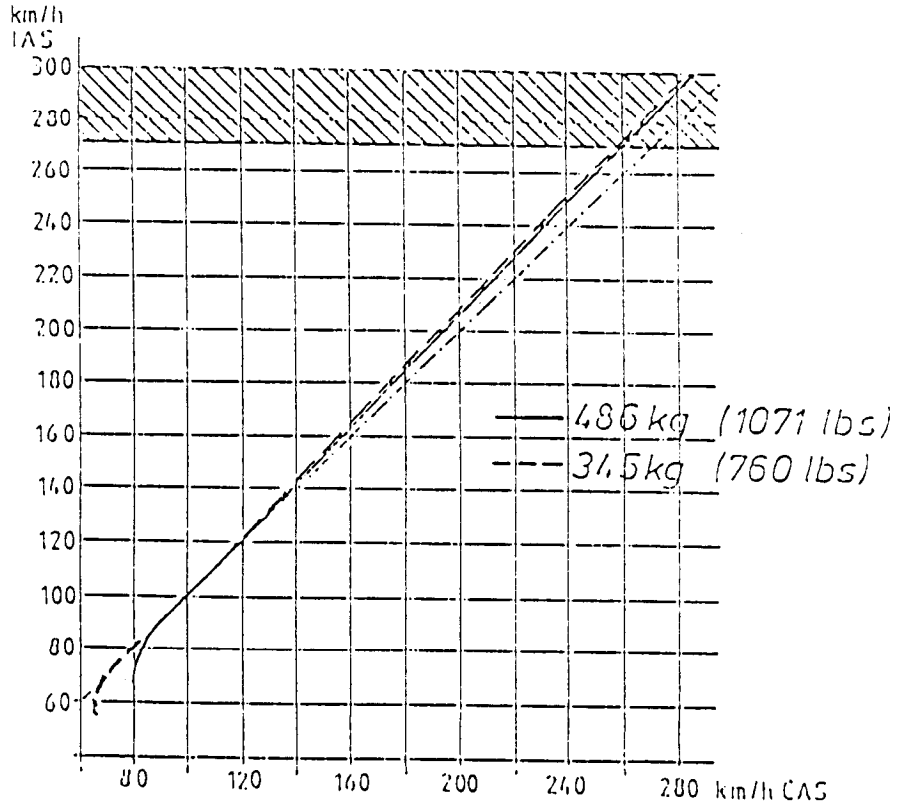
The data in the charts has been computed from actual flight tests with the sailplane in good condition and using average piloting techniques.

5.2 APPROVED DATA

5.2.1 AIRSPEED INDICATOR SYSTEM CALIBRATION

This diagram shows airspeed indicator error due to position of pressure ports.

Pressure ports: Vertical tail fin pitot
Lower forward fuselage side statics



Erstellt: 08. SEP. 1989	Geprüft: -8. SEP. 1989

(7FE5)

5.2.2 STALLING SPEEDS

Stalling speeds (IAS) for straight and level flight:

without water ballast Total weight 384 kg (847 lbs)			with maximum water ballast Total weight 486 kg (1071 lbs) (Maximum approved)		
62 km/h	33 kts	39 mph	67 km/h	36 kts	42 mph

5.3 ADDITIONAL INFORMATION

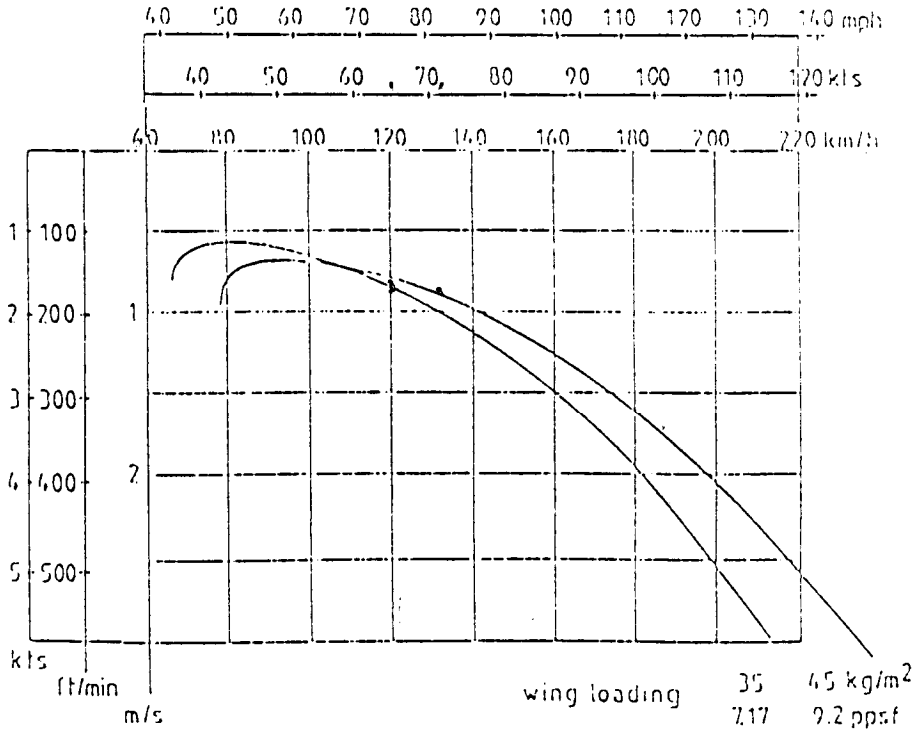
5.3.1 DEMONSTRATED CROSSWIND PERFORMANCE

Demonstrated crosswind components:

during aero tow:	20 km/h (11 kts, 12 mph)
during winch launch:	30 km/h (16 kts, 19 mph)

5.3.2 FLIGHT POLAR

The flight polar gives forward speed versus sinking speed related to flap settings and wing loading.
It is valid for "clean" wing. Insects and raindrops on wing decrease performance and handling, see also page 4-15, Landing.



Erstellt: 08. SEP. 1989	Geprüft: -8. SEP. 1989

(7FE5)

SECTION 6

6.1 INTRODUCTION

This section gives details about permissible Cockpit Loading and approved mass limitations of this sailplane.

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 this manual on page 6-2.

The procedures for establishing the basic empty mass, mass of non-lifting parts, center of gravity and loading limits is given in Maintenance Manual chapter 2.

6.2 COCKPIT LOADING PLAN (Pilot and parachute)

WARNING: New entry with each annual inspection and when changing equipment. Entry should be calculated in accordance with chapter 2 of Maintenance Manual.

State dimensions used!
State amount of permanently fitted ballast in appropriate position or None.

Empty weight	Empty weight C.G. Pos.	Maximum Perm. Cockpit Load	Minimum Perm. Cockpit Load	Permanently fitted Ballast forward	Permanently fitted Ballast aft	Battery in tail fin Yes/No	Tail-fin water tank Yes/No	Wing ballast volume	Date / Inspector

Erstellt:	Geprüft:

(7FE6)

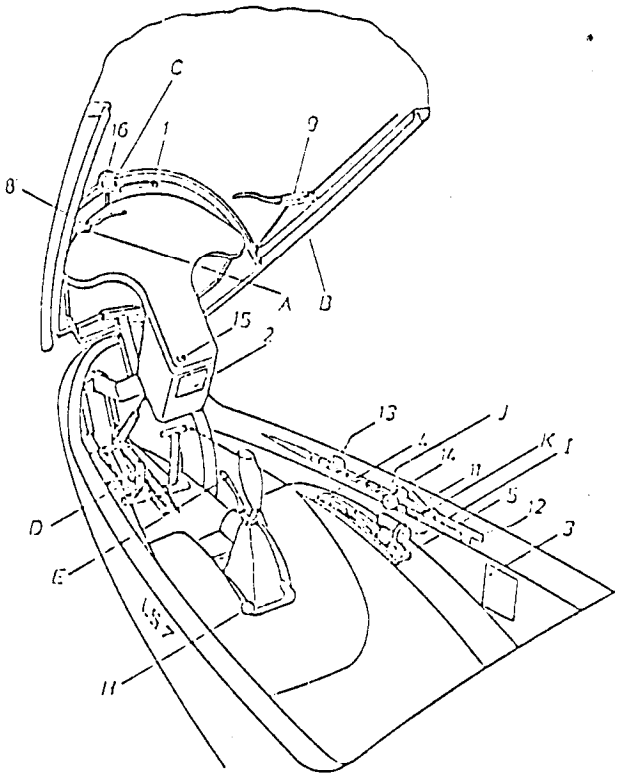
SECTION 7

7.1 INTRODUCTION

This section provides description of the sailplane's operating systems, instrumentation and other information necessary for the safe operation of the sailplane and its systems.

7.2 COCKPIT CONTROLS

Numbers refer to placards, see also Flight Manual, page 2-8 and Maintenance Manual chapter 10.



A Left canopy locking

B Right canopy locking and emergency canopy release

C Ventilation

D Tow cable release

E Trim lever

F Trim locking lever

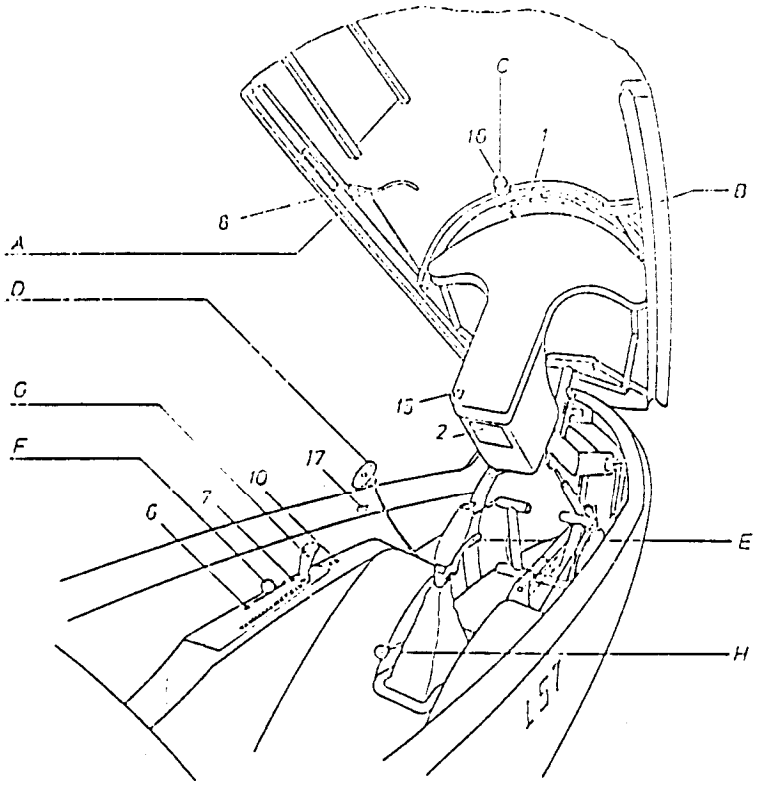
G Air brake handle

H Pedal adjustment

I Landing gear

J Backrest slope adjustment

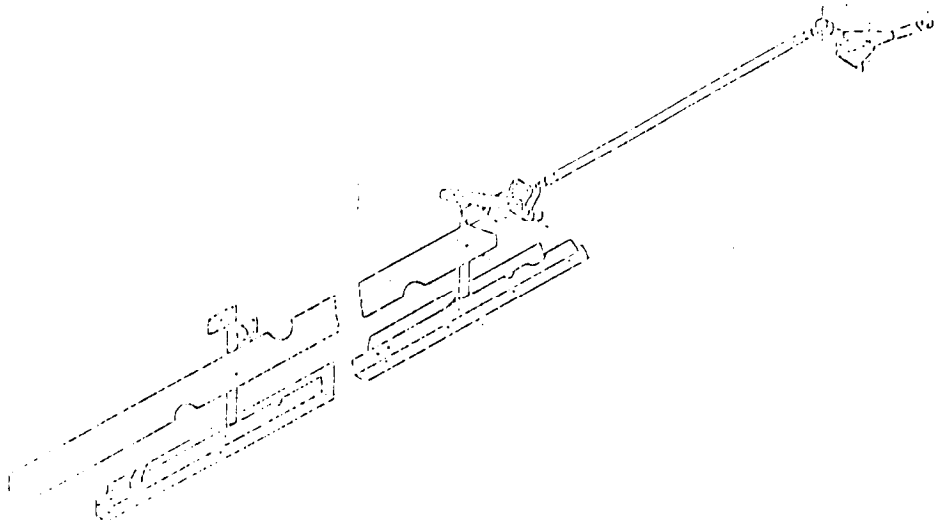
K Water ballast valve



Erstellt:	Geprüft:

(7FE7)

7.3 AIR BRAKE SYSTEM



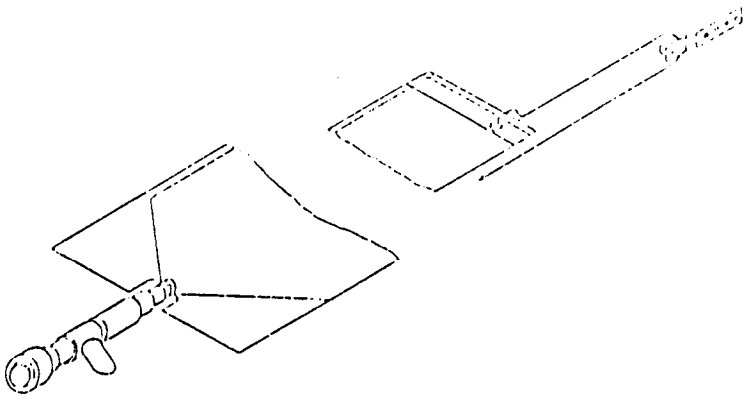
7.4 BAGGAGE COMPARTMENT

Baggage compartment is accessible only on the ground after swiveling backrest forward. Loading possible after rigging. Equipment (for instance batteries) must be installed according to Maintenance Manual, chapter 11.

7.5 WATERBALLAST SYSTEM and OPERATION

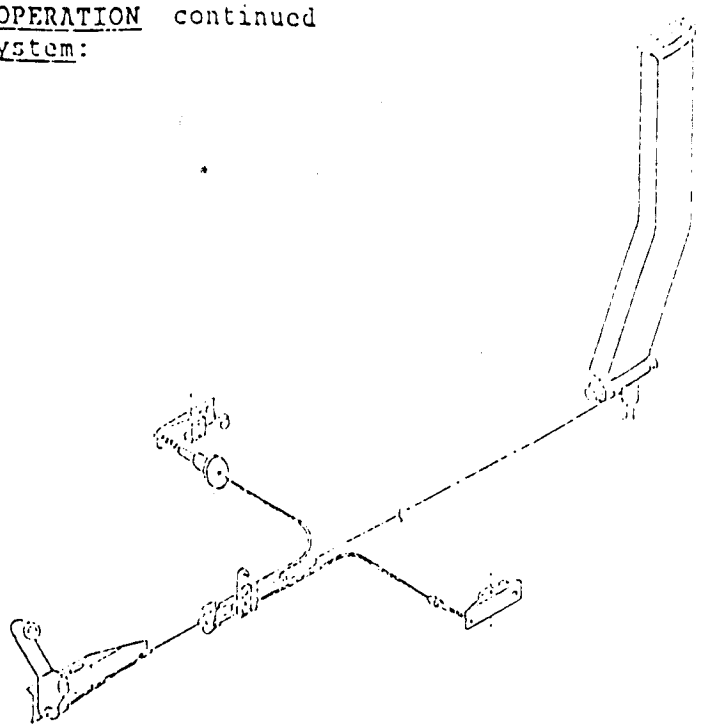
Lever at right cockpit rim operates total water ballast system (Wing tanks and optional tail fin tank). Wing operating system couples automatically during rigging. Use as clean water as possible to avoid damage of seals due to foreign matter.

Wing Water Ballast System:



7.5 WATERBALLAST SYSTEM and OPERATION continued

Fuselage Water Ballast System:

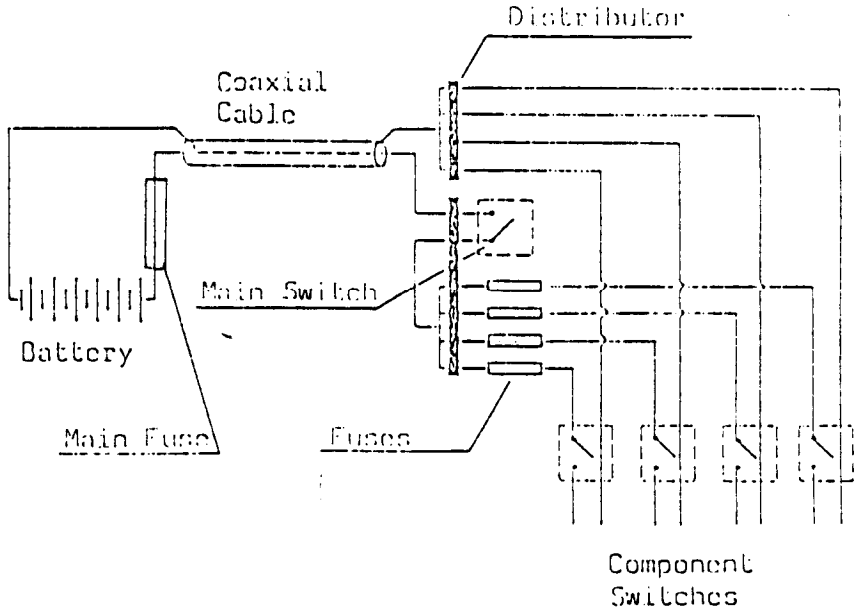


7.6 ELECTRICAL SYSTEM and OPERATION

For electrical system principle see wiring diagram below. Power supply by 12V battery, for types and minimum capacity see Master Equipment List in Maintenance Manual, chapter 12.

In case of two batteries, a three-position switch may be used as main switch. A current limiting device must be provided for each electrical user (microfuses or circuitbreakers, details see Master Equipment List). When using circuitbreakers, a separate main switch is not necessary.

Position of fuses: Main fuse at battery
Single component fuses at lower instrument panel area



Erstellt:	Geprüft:

7.7 PNEUMATIC SYSTEM (Static and total pressure)

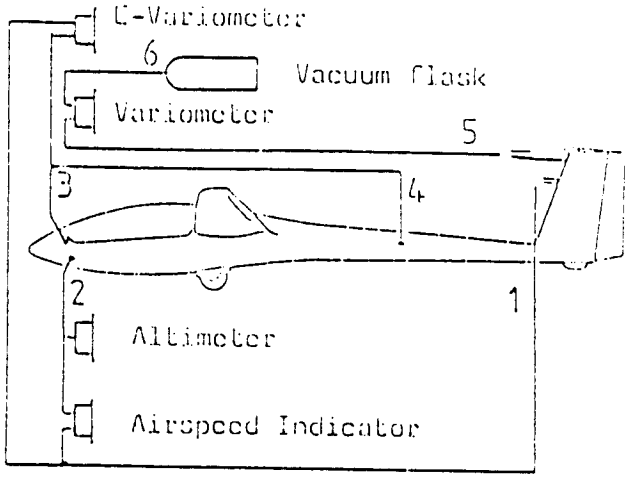
Pressure ports: Vertical tail fin pitot below TE port

Statics: For airspeed indicator and altimeter :
Lower forward fuselage side statics
For Variometers: Upper forward fuselage side statics
Fuselage boom

Total energy port at upper vertical tail fin

Tubing colour code:

1 Fin pitot red
2 Lower side statics blue
for airspeed and altimeter only !
3 Upper side statics clear 6 mm
Ø.24 in ø
4 Boom statics yellow
5 T.E.port green
6 Vacuum bottles for variometers
clear 8 mm
Ø.32 in ø



When connecting an electrical variometer (E.V.) additionally to the boom static ports (tube No. 4), a blowing circuit must be switched operative to avoid water entering system during water ballast discharge. Thus the electrical variometer is inoperative during water discharge.

7.8 VARIOUS EQUIPMENT

7.8.1 EXPENDABLE BALLAST (TRIM WEIGHTS)

Expendable ballast to compensate pilot weight below Minimum Cockpit Load may be fitted on threaded rod in front of rudder pedals and secured with knurled nut (12 mm thread).

7.8.2 OXYGEN SYSTEM

Fiberglass receptacle at left main bulkhead for 3 or 4 Liter oxygen bottles of 100 mm (3.94 in) in diameter.
After permanent installation of an oxygen system according to it's manufacturers instructions by an adequately licenced repair shop, the sailplane including oxygen system must be inspected (Weight and Balance, Loading Instructions).
When using a removable oxygen unit, it's weight must be counted as useful load.

7.8.3 EMERGENCY LOCATOR TRANSMITTER

Possible installation location behind baggage compartment, base plate bonded to upper fuselage shell. Remote control from instrument panel necessary. After installation, loading limit values must be checked according to Maintenance Manual chapter 2.

SECTION 8

8.1 INTRODUCTION

This section contains manufacturer's recommended procedures for proper ground handling and servicing of the sailplane. It also identifies certain inspection and maintenance requirements which must be followed if the sailplane is to retain that new-plane performance and dependability. It is wise to follow a planned schedule of lubrication and preventive maintenance based on climatic and flying conditions encountered.

a) For service and information not contained within this manual, it is recommended to contact agent or manufacturer.

b) All correspondence regarding the sailplane should carry its serial number.

c) The serial number can be found on the type placard, on the right side of the main bulkhead.

d) A Maintenance Manual is issued with each sailplane.

8.2 SAILPLANE INSPECTION PERIODS

a) Annual Inspection according to checklist and inspection forms provided in Maintenance Manual, chapter 2, after performance of annual maintenance procedure .

b) Manufacturer recommended daily inspection, preflight check and cockpit checklist procedure according to checklists, chapter 4.

c) Manufacturer recommended extraordinary inspection, depending on circumstances (rough landings, ground loops etc.) as provided in Maintenance Manual, chapter 2.

d) Other inspections may be required by the issuance of airworthiness directives applicable to the aircraft or components.

It is the responsibility of the owner/operator to determine that all applicable airworthiness directives are complied with.

When inspections are repetitive, inadvertent noncompliance may be prevented by adding them to the end of the annual inspection checklist or by a special inspection schedule.

e) Life limited parts, such as tow release system components or seat belt harness may require other inspections. See chapter 10 and Maintenance Manual, chapter 5.

Agency or personnel accomplishing the required inspections and most of the manufacturer recommended inspections must be properly certificated. In case of doubt, consult agent, manufacturer or FAA.

8.3 PREVENTIVE MAINTENANCE that may be accomplished by a certificated pilot

a) A certificated pilot who owns or operates an airplane not used as an air carrier is authorized by FAR Part 43 to perform limited preventive maintenance on his airplane. Refer to FAR Part 43 for appropriate list.

b) All other maintenance required is to be accomplished by appropriately licensed personnel.

c) Preventive maintenance should be accomplished in accordance with the appropriate airplane Maintenance Manual, to be sure that proper procedures are followed. A Maintenance Manual is delivered with each sailplane, carrying the serial number.

8.3.1 ALTERATIONS OR REPAIRS

a) Alterations or repairs must be accomplished by licensed personnel.

b) Prior to any alteration the FAA should be contacted to make sure that airworthiness of the airplane is not violated.

Erstellt:	Geprüft:

(7FE8)

8.3.1 ALTERATIONS OR REPAIRS continued

c) For alterations or repairs a written approval from the manufacturer is required. (Special advice, drawings, etc.)

Repair damage prior to next flight

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

Major repairs must be accomplished at national authority-certified repair stations rated for composite aircraft structure work in accordance with Rolladen-Schneider repair methods.

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

8.4 GROUND HANDLING / ROAD TRANSPORT

For assembly and disassembly procedures see Normal Procedures, chapter 4.

GROUND TOWING
- tow at walking speed only
- use elastic cable from tow release and helper at wingtip

or
- use tail dolly with tow bar and sprung wheel at one outer wing

SUPPORTING AREA FOR ROAD TRANSPORT

FUSELAGE:
- tail skid or tail wheel
- main wheel
- shell in front of landing gear, minimum width of support 300 mm (11.8 in)

WING:
- right spar at inner or outer main pin hole
- left forked spar at inner main pin hole. At outer main pin hole only, if both fork end are supported.
- shell at root, minimum width of support 150 mm (5.9 in)
- shell at half span of wing half, minimum width of support 250 mm (10 in)

IMPORTANT NOTE: The aileron sandwich is pressure sensitive, handle carefully!

HORIZONTAL TAIL UNIT
- at any place, minimum width of support 80 mm (3.2 in)

SUPPORTING AREA TO LIFT WHOLE SAILPLANE
- under wing spar, never under nose section
- under fuselage shell in front of wing
- under fuselage shell behind wing

Erstellt:	Geprüft:

(7FE8)

8.5 CLEANING AND CARE

IMPORTANT WARNING: Unless regularly polished with hard wax after each cleaning, sanded gelcoat shows distinctive weathering marks due to changes of temperature, ultra violet radiation and humidity.

Humidity enters resin structure after prolonged application and causes swelling up. High temperatures at the same time speed this process up. Conserving gelcoat with wax decelerates this process, but is unable to stop it completely.
Therefore, try to remove water whenever it enters interior as far as possible using a sponge. If need be, store in dry environment for drying.

Ultra violet radiation (sunlight, particularly strong during high altitude flights) causes the polyester coat to embrittle and to become yellow. Therefore, avoid unnecessary exposure to sunlight (for instance outside parking instead of packing into the trailer).

Self-adhesive tape residues should only be wiped off with white gasoline. (See also following recommendations from paint manufacturer Lesonal)

For Plexiglas care never use dry cloth because of resulting static charge, consequent collection of dust particles and scratching. Cleanse with clear water and clean chamois leather, use anti static fluid afterwards (for instance Plexiklar).

CLEANING AND CARE recommendations according to paint manufacturer Lesonal's note dated 7.7.81:

Suitable	- water with washing-up liquid, added in recommended quantities - car polish with or without silicone - car hardwax
Suitable with reservations	- tar remover for cars based on petrol or white gasoline - alcohol, like spirit or isopropyl alcohol ‖ Reservations are, that these liquids should only be used ‖ for wiping off, not for soaking with rags.
Unsuitable	- strong solvents and thinners (acetone) ‖ These items may decompose gelcoat and cause local ‖ shrinking.
Completely unsuitable	- trichlorethylene - carbon tetrachloride or similar hydrocarbon chlorides ‖ These liquids destroy the gelcoat

Other over the counter products must be tested before being used !