LET
An Ayres Company

MANDATORY BULLETIN

MB No: L 33/012a

Concerning: Maintenance Manual L 33 SOLO Sailplane (Do-L33.1031.3)

Reason: Actualize of the MM.

To be carried out at the latest by:	On receiving this bulletin.
To be carried out by:	Holder of MM.
Costs to be covered by:	No costs arise.
Necessary material to be supplied by:	New pages are enclosed.
Bulletin becomes effective:	Since the date of receiving.
Manhours required:	0
Total number of pages:	Title page and 56 pages (enclosed).

.....

Manufacturer

Engineering data contained in this Bulletin is CAA Approved.

Date:

0.1 RECORD OF REVISIONS

Rev. No.	Description	Affected pages	Date
1	Documentation bulletin No. L 33/002d	0-1, 0-2, 0-3, 7-2, 7-3, 7-4	Jun 28/96
2	Mandatory bulletin No. L 33/012a	0-1 to 0-4, 1-1, 1-5, 1-6, 1-10, 1-11, 1-14, 1-15, 2-2 to 2-6, 2-9, 3-3, 4-11, 4-12, 5-18 to 5-35, 6-2, 6-3, 7-2, 7-5 to 7-11, Supplements No. 1, 2, 4, 5 and 6	Jan 21/00

0.2 LIST OF EFFECTIVE PAGES

Section	Page	Date	Section	Page	Date
0	1	Jan 21/00	3	1	Aug 31/95
	2	Jan 21/00		2	Aug 31/95
	3	Jan 21/00		3	Jan 21/00
	4	Jan 21/00			
			4	1	Aug 31/95
1	1	Jan 21/00		2	Aug 31/95
	2	Aug 31/95		3	Aug 31/95
	3	Aug 31/95		4	Aug 31/95
	4	Aug 31/95		5	Aug 31/95
	5	Jan 21/00		6	Aug 31/95
	6	Jan 21/00		7	Aug 31/95
	7	Aug 31/95		8	Aug 31/95
	8	Aug 31/95		9	Aug 31/95
	9	Aug 31/95		10	Aug 31/95
	10	Jan 21/00		11	Jan 21/00
	11	Jan 21/00		12	Jan 21/00
	12	Aug 31/95			
	13	Aug 31/95			
	14	Jan 21/00	5	1	Aug 31/95
	15	Jan 21/00		2	Aug 31/95
				3	Aug 31/95
				4	Aug 31/95
2	1	Aug 31/95		5	Aug 31/95
	2	Jan 21/00		6	Aug 31/95
	3	Jan 21/00		7	Aug 31/95
	4	Jan 21/00		8	Aug 31/95
	5	Jan 21/00		9	Aug 31/95
	6	Jan 21/00		10	Aug 31/95
	7	Aug 31/95		11	Aug 31/95
	8	Aug 31/95		12	Aug 31/95
	9	Jan 21/00		13	Aug 31/95
	10	Aug 31/95		14	Aug 31/95
	11	Aug 31/95		15	Aug 31/95
	12	Aug 31/95		16	Aug 31/95
	13	Aug 31/95		17	Aug 31/95

Section	Page	Date	Section	Page	Date
5	18	Jan 21/00	Supplement	1	Jan 21/00
	19	Jan 21/00	No. 1		
	20	Jan 21/00			
	21	Jan 21/00	Supplement	1	Jan 21/00
	22	Jan 21/00	No. 2	2	Jan 21/00
	23	Jan 21/00		3	Jan 21/00
	24	Jan 21/00			
	25	Jan 21/00	Supplement	1	Aug 31/95
	26	Jan 21/00	No. 3		
	27	Jan 21/00			
	28	Jan 21/00	Supplement	1	Jan 21/00
	29	Jan 21/00	No. 4		
	30	Jan 21/00			
	31	Jan 21/00	Supplement	1	Jan 21/00
	32	Jan 21/00	No. 5	2	Jan 21/00
	33	Jan 21/00			
	34	Jan 21/00	Supplement	1	Jan 21/00
	35	Jan 21/00	No. 6		
6	1	Aug 31/95			
	2	Jan 21/00			
	3	Jan 21/00			
7	1	Aug 31/95			
	2	Jan 21/00			
	3	Jun 28/96			
	4	Jun 28/96			
	5	Jan 21/00			
	6	Jan 21/00			
	7	Jan 21/00			
	8	Jan 21/00			
	9	Jan 21/00			
	10	Jan 21/00			
	11	Jan 21/00			

0.3 CONTENTS

SECTION 1

Description

CONTENTS

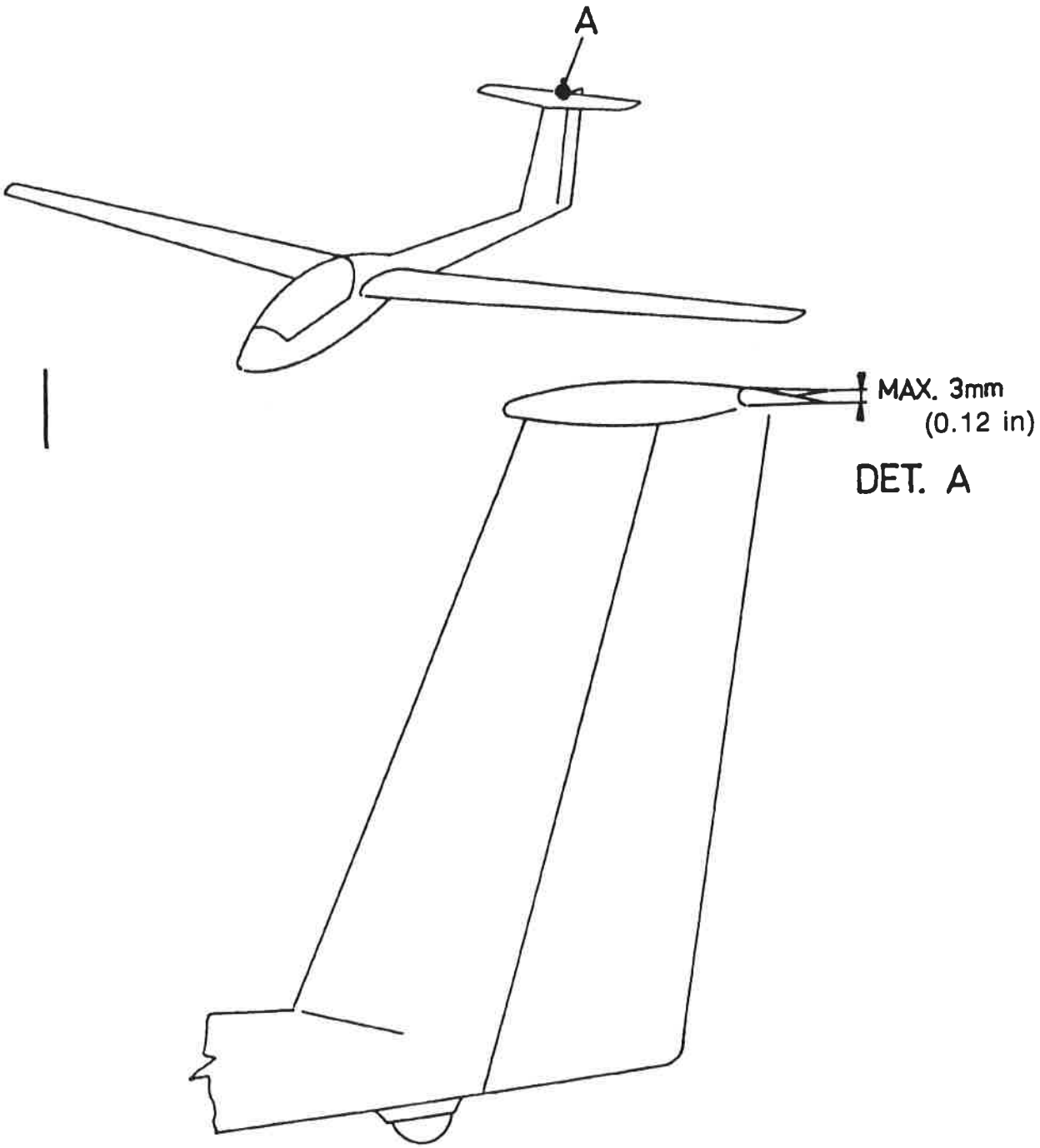


FIG.1 - 2

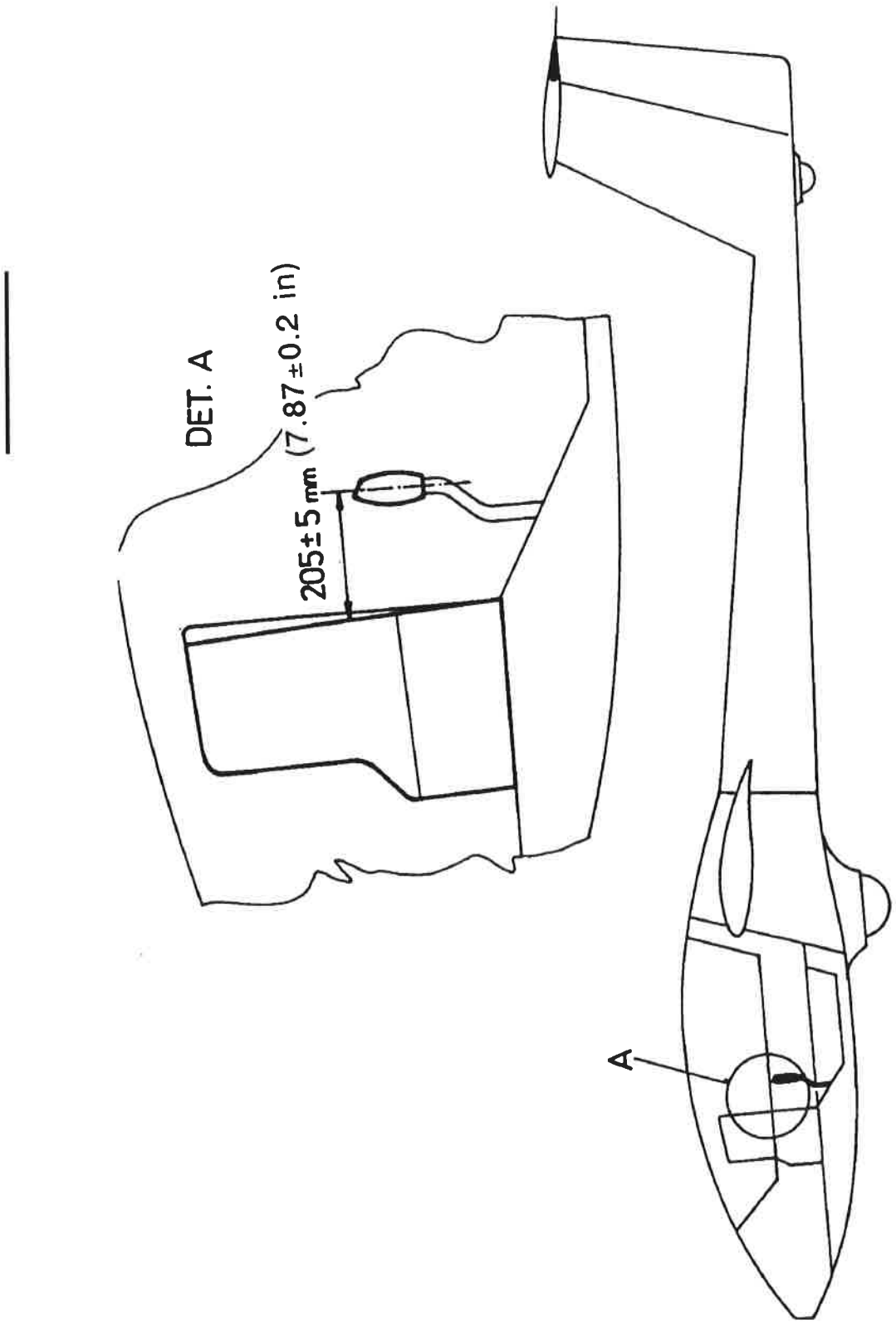


FIG.1 - 3

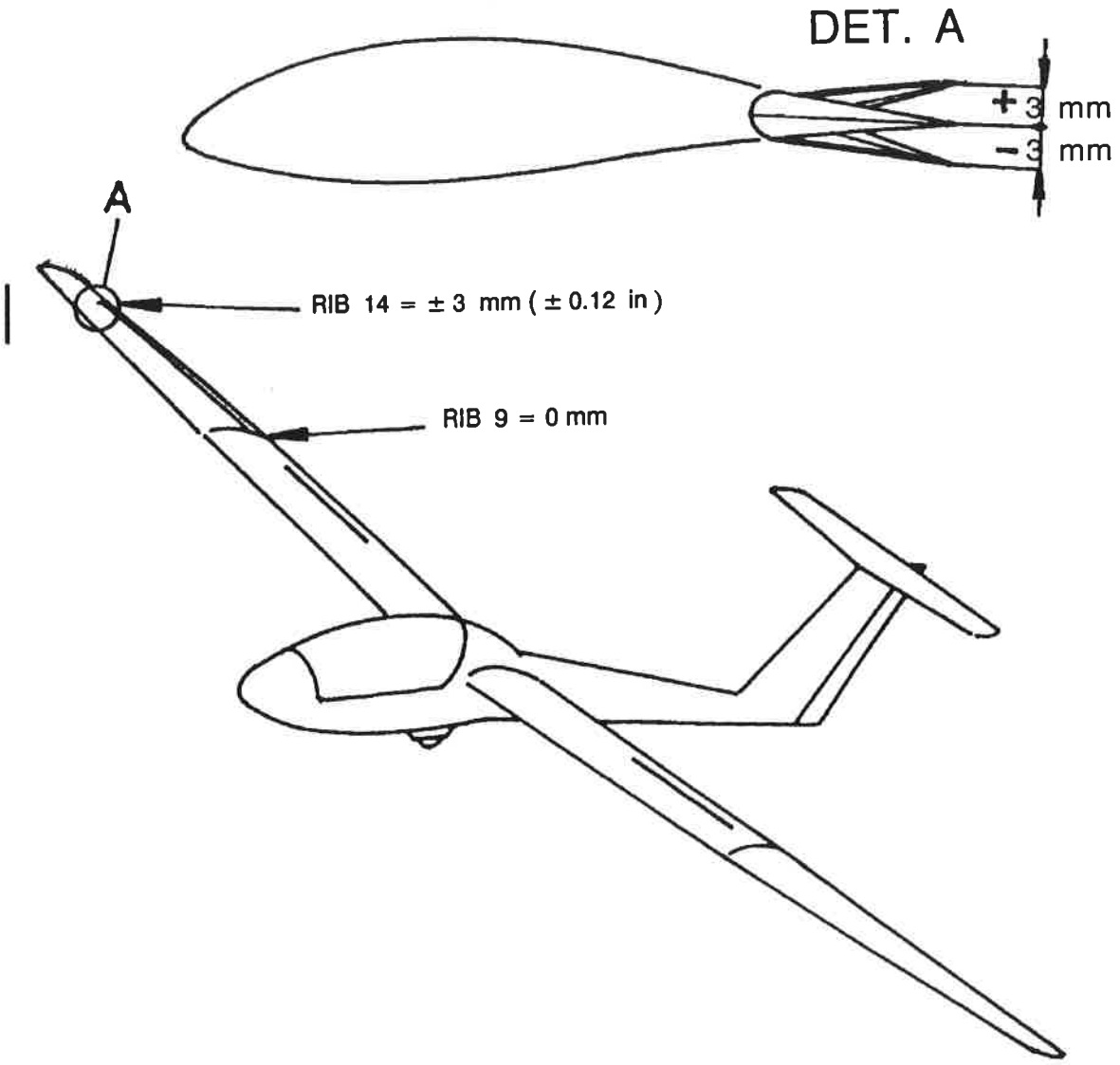


FIG. 1 - 8

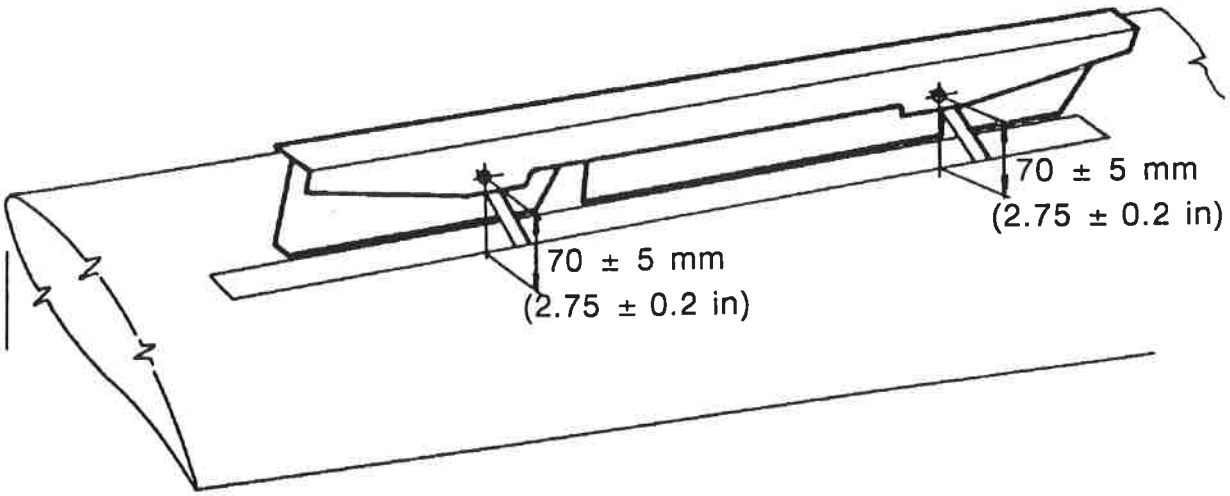
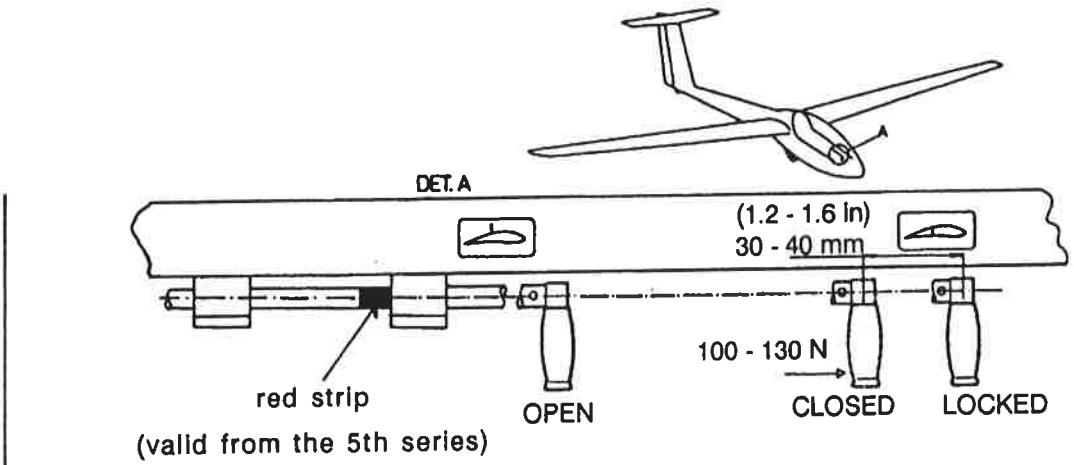


FIG. 1 - 9



red strip: - **shown** - open and closed position
- **not shown** - locked position

FIG. 1 - 10

1.5 THREE - VIEW DRAVING (Dimensions in mm/ft)

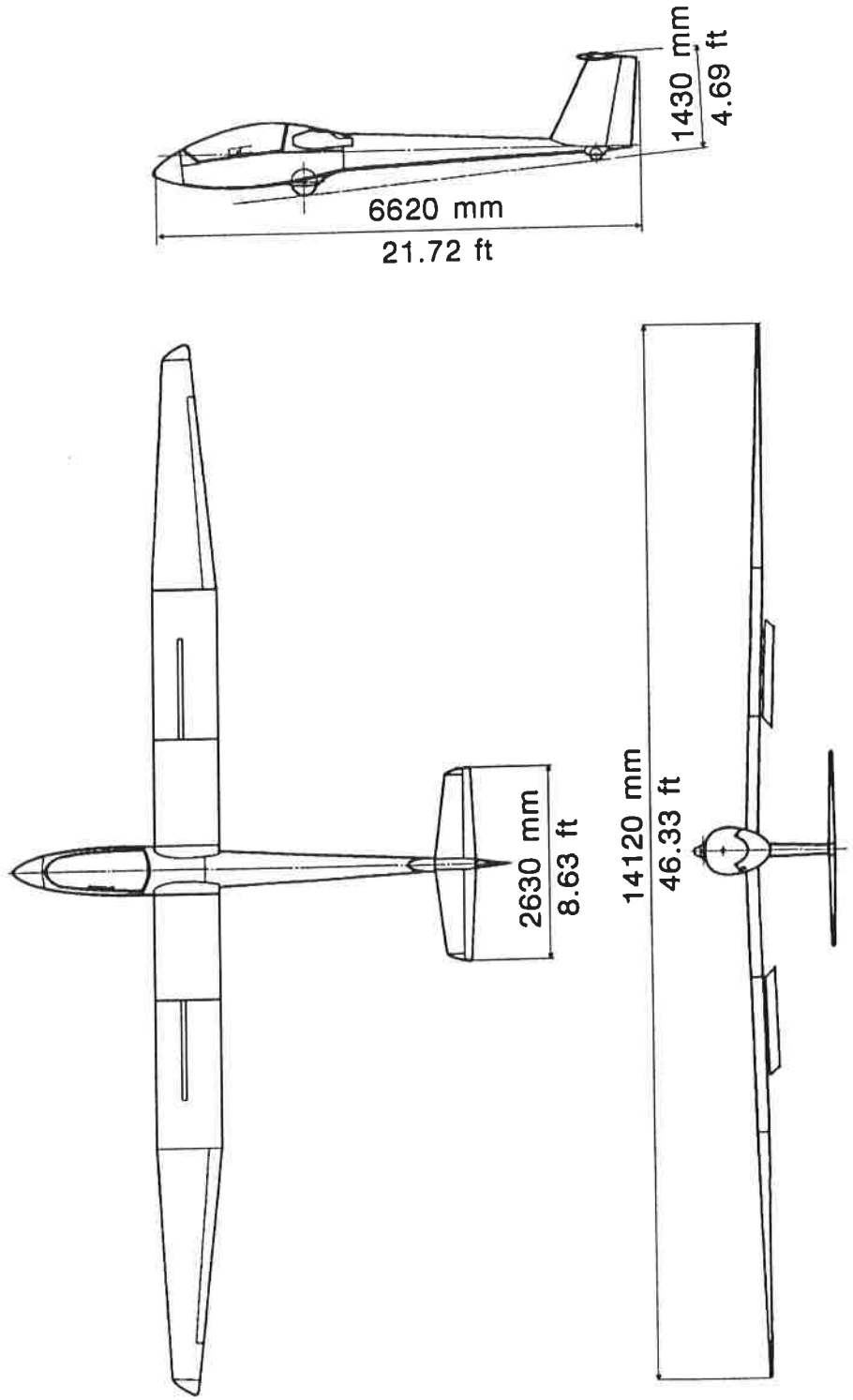


FIG.1 - 13

1.6 PITOT STATIC SYSTEM (FIG. 1-14)

Pitot static system consists of duralumin tubes which are connected each other by hoses.
Whole system is ended in base of the instrument panel.
The individual tubes for static, compensated and total pressure are marked with I abels.

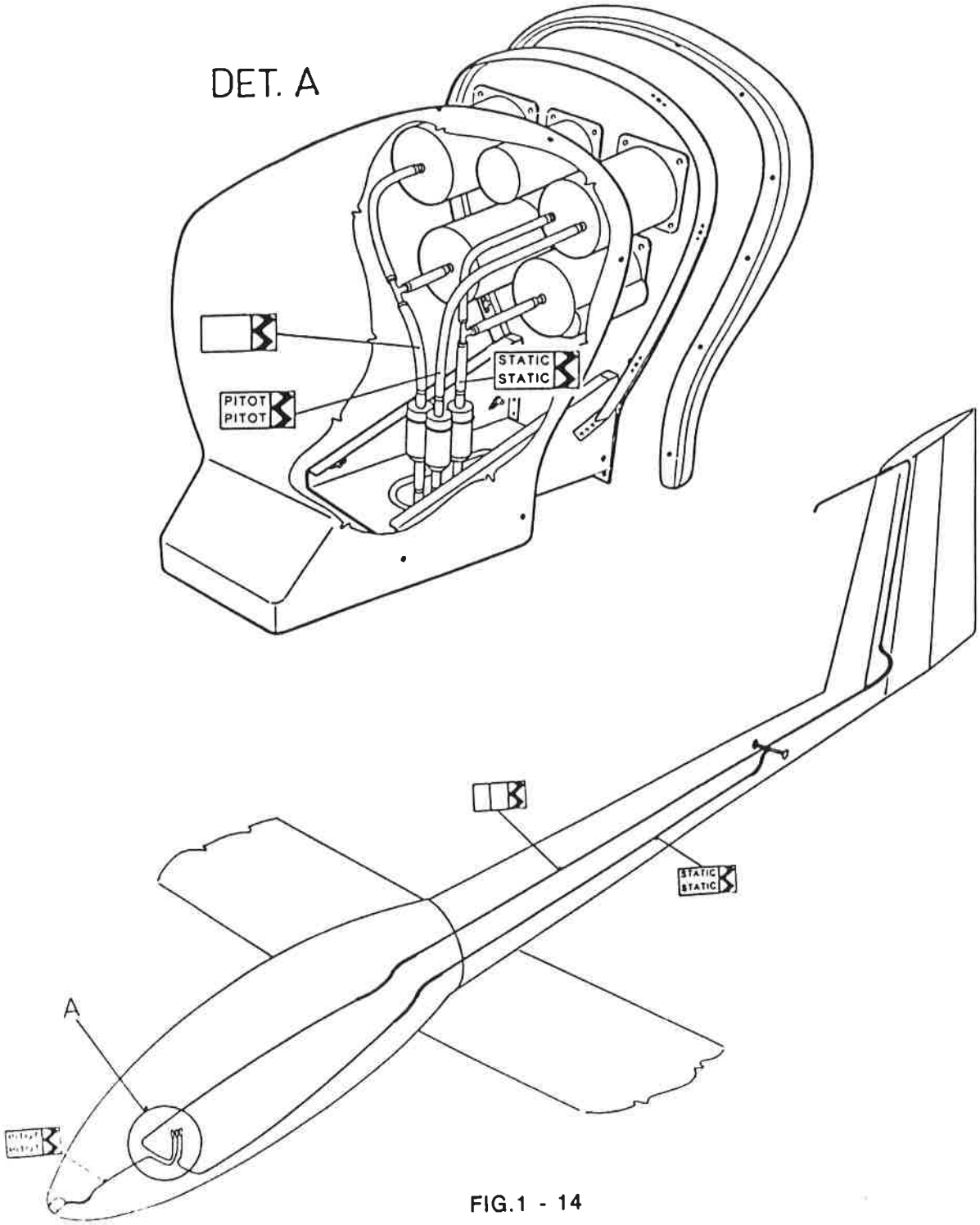


FIG.1 - 14

2.1 SAILPLANE SERVICE LIFE

The safe life time for L 33 sailplane is limited to 10,000 flight hours or 20,000 take-offs.

2.2 SAILPLANE OPERATIONAL MAINTENANCE

Perform the following work after each flight day (all inspections will be general visual inspections unless otherwise stated).

A. Ventilation

Inspect air vent system.

B. Electric power

Inspect the battery fixing construction (FIG. 2-1).
Check battery capacity-recharge if necessary.

C. Equipment/furnishing

Check fixing of „first aid" box (if installed).

D. Control

Check the operation of controls and attachment of air brakes, check control cables wear in fairleads. Check trim operation.

E. Instrument panel

Check attachment of the panel and inspect if instruments are not damaged.

F. Landing gear

Inspect area adjacent to the main and tailwheel. Check brake function and shock absorber operation.
Check the main landing gear wheel pressure: 28 + 7 psi (200 + 50 kPa)
Check the tail wheel pressure: 17 + 3 psi (120 + 20 kPa)

G. Fuselage

Inspect the fuselage skin. Check correct operation of tow-hooks control mechanism.
Check wing connecting pins locking (FIG. 4-3).

H. Empennage

Check the skin of the empennage. Check the rudder and elevator movability and stabilizer attachment (including front pin).

I. Canopy

Inspect the canopy and side windows glass. Check locking lever of emergency canopy jettison.

J. Wing

Inspect wing skin.
Check correct movement of allerons and air brakes.

2.3 SAILPLANE PERIODICAL MAINTENANCE

A. Pre-flight check

Before operational day or after rigging the sailplane carry out pre-flight check. The procedure of pre-flight check is in L 33 Flight Manual section 4.3.

B. Annual or 100-hour inspection

Annually or after 100±10 flight hours or after 200±20 take-offs (whichever comes first) carry out the following:

Annual or 100-hour inspection	Mech.	Insp.
A.Remove or open all necessary inspection covers, lids and fairings (FIG. 2-2). Clean the sailplane surface. Inspect the sailplane and remove the revealed defects (item 5.2 Approved repairs).		
B.Components of the fuselage and hull group.		
1.Fabric and skin-for cracks or deformation or other evidence of failure or insecure attachment of fittings.		
2.Systems and components- for improper instalation, apparent defects, and unsatisfactory operation. Maintain the TOST tow-hooks according to instructions in chapter 4. After 4 years or 2,000 take-offs it is necessary to carry out inspection by the tow-hooks manufacturer-address is mentioned on page 6-3. In case of corrosion, damage or breakage of one string of rudder cable, replace the cable.		
C.The components of the cockpit.		
1.Generally-for uncleaness and loose items that might foul the controls.		
2.Seat and safety belts-for technical condition and apparent defects.		
3.Canopy-for entirety, deformation.		
4.Instruments-for technical condition, mounting, marking, (where practicable) for improper operation, for mechanical damage of visible parts of instruments. Replace the defective instruments and after installation verify proper function. Carry out magnetic compass compensation.		
5.Batteries-for improper installation, capacity, leakage and evident failures (FIG. 2-1).		
6.Brake-improper adjustment, worn lining. Wear of the rivet heads fixing the break lining is not permissible.		
D.The landing gear group.		
1.All parts-for damage and loosening of attachments.		
2.Shock absorber-pressure of gas filling (FIG. 2-3). Contact the sailplane manufacturer in case of shock absorber malfunction.		
3.Landing gear spar and parts-for untypical or excessive wear, cracks, and distortion.		
4.Wheel discs-for cracks, defects and condition of bearings.		
5.Tyres-for wear, damage and pressure (Par. 2.2 F). Brake-unproper adjustment (Par. 3.3).		

Annual or 100-hour inspection	Mech.	Insp.
E.Wing. **1.All components and system of the wing (where applicable) for general condition, skin damage, deformations, evidence of failure, loosening and damage of attachments.** **2.Inspect rivets rows on the wing, mainly rivets of bottom spar cap from fairing wing-fuselage to section No. 3.** **Criterion of damage:** **-loosed rivets, more than 4 in row one after the other-tight them** **-damage of rivet head-replace the rivet** F.Empennage. **1.The complete empennage assembly for general condition, fabric or skin damage, deformations, evidence of failure, loosening and damage of attachments, improper components installation, and improper component operation** G.The components of the radio communication equipment. **1.Transceiver-for improper mounting and damage** **2.Wiring and conductors-for improper routing, insecure mounting, and obvious defects** **3.Grounding-for proper attachment and damage** H.Each installed miscellaneous item (where applicable)that is not otherwise covered by this listing for improper installation and improper operation. I.Each person performing an annual or 100-hour inspection shall follow the following procedure of sailplane greasing (FIG. 2-4, 2-5, 2-6, 2-7). **1.Fuselage** **Grease:** **-all accessible controls joints** **-control cables in hoses with S-shape at pedals so that the pedals can be easily adjusted** **- trim springs** **-control mechanism for opening and jettisoning the canopy** **-tie rods and towing-hook releasing device cable** **CAUTION** **Be careful to grease necessary spots on the main landing gear on the shock absorber, attachment of the wheel fork to the fuselage, the connection of the lever of the wheel brake to the brake control cable.**		

Annual or 100-hour inspection	Mech.	Insp.
2.Wing **Grease :** **- all accessible controls joints** **- bearings of levers of automatic connection to the wing root rib** **- hinge bearings** **- bearings of hinges and drives of air brakes and ailerons** **3.Empennage** **Grease the hinges of elevator and rudder** J.Check control surface deflections (Ref. Supplement No.2, page 3).		

C. 1,000-hour inspection.

After 1,000±50 flight hours or 2,000±100 take-offs (whichever comes first) carry out inspection according to point B. expanded by inspection according to Supplement No.6.

2.4 UNSCHEDULED INSPECTIONS

The following work is performed as required:

If airspeed v_{NE} has been exceeded, or after a hard landing, or after serious damage of the sailplane - perform the levelling procedure as per Paragraph 4.3 and Supplement No. 2 - Levelling Record.

Check of shock absorber

Pressure in the shock absorber must be 3.2 ± 0.1MPa(469 ± 14.2psi)
Check procedure - see Supplement No. 5

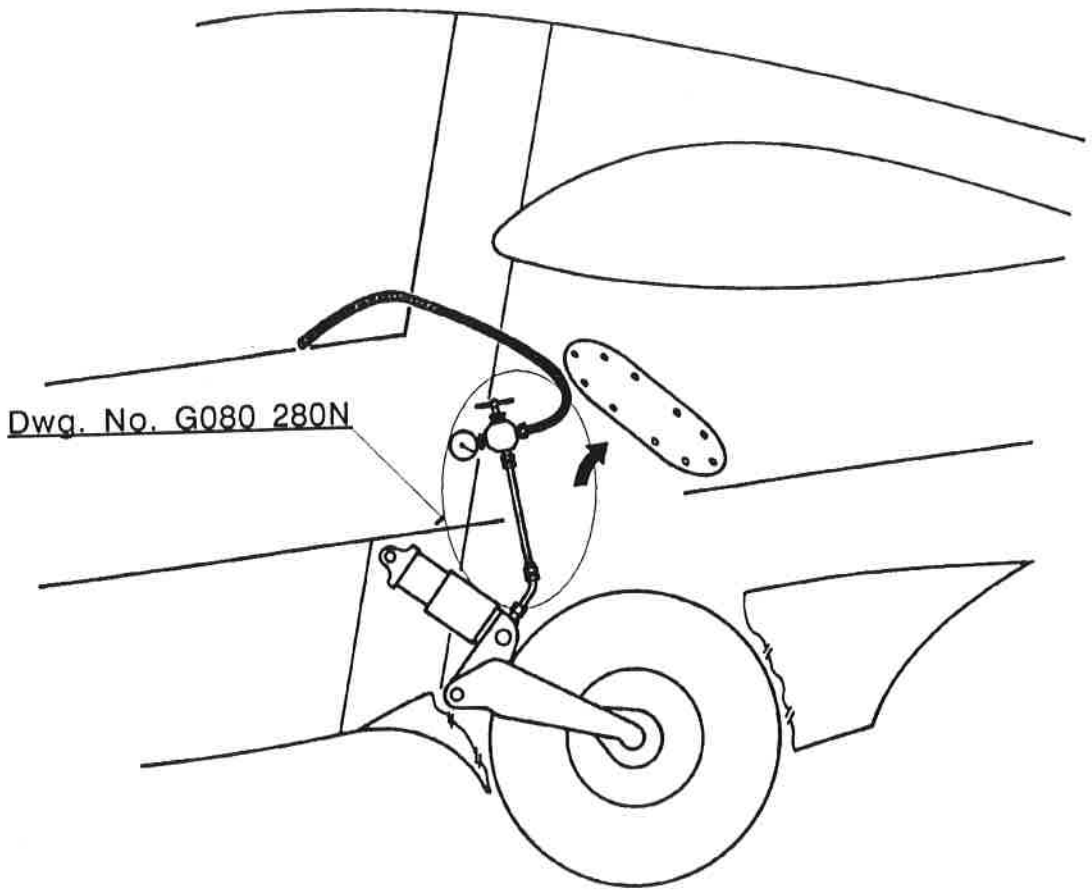


FIG. 2 - 3

3.3 BRAKE ADJUSTMENT (FIG. 3-2)

If the bracking efficiency is not sufficient :

- lift off the cap of the brake adjustment hole (pos. 17)
- adjust operation play between the brake drum and the brake lining to value of 0.2 mm by means of brake adjustment screw (pos. 15)
- after adjusting the wheel must freely rotate

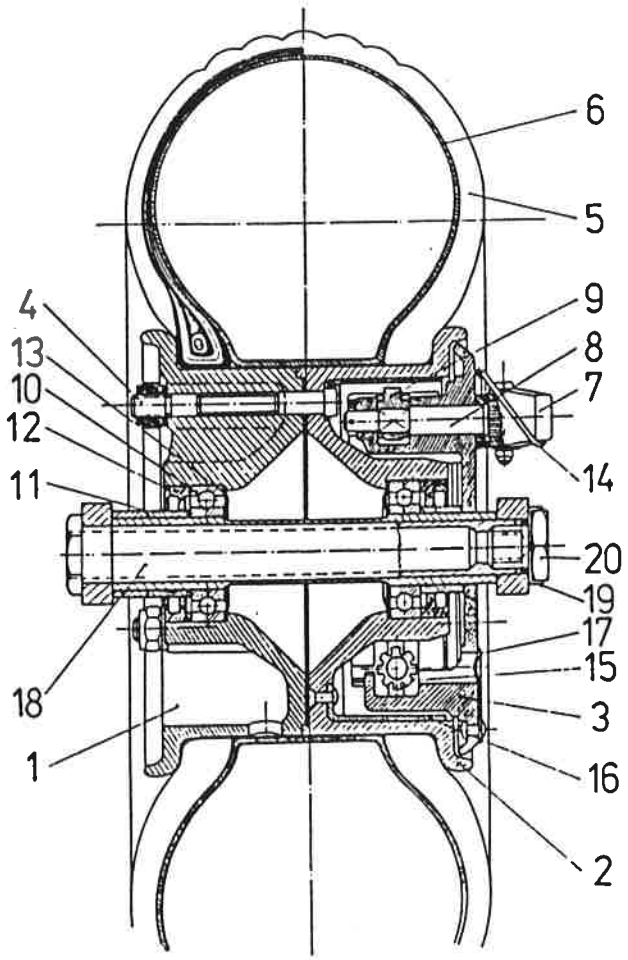


FIG. 3 - 2

1 - Wheel disk half; 2 - Wheel disk brake-half; 3 - Brake body; 4 - Bolt with nut and washer; 5 - Tyre 350 x 135 mm; 6 - Tyre tube 350 x 135 mm; 7 - Brake lever; 8 - Shaft; 9 - Brake cam; 10 - Ball bearing; 11 - Bushing; 12 - Insert; 13 - Cap; 14 - Spring, 15 - Brake adjustment screw; 16 - Brake drum; 17 - Cap of the brake adjustment hole; 18 - Axis of wheel; 19 - Washer; 20 - Nut.

C. Cleaning and care

The sailplane must be stored in dry and ventilated room. Aviod exposure of mechanical loading. In case of long period storage preserve fuselage, wing and empennage hinges against corrosion.

During transportation on trailer all parts of the sailplane must be firmly fixed. The wing must be fixed with the leading edge downward and supported at the wing root and at the outer part by shaped upholstered supports beneath the ribs. The fuselage must be put at wide shaped cradle in front of tow-hook near the centre of gravity and supported at the area of the tail landing gear. The horizontal tail plane should be put on the leading edge in shaped supports.

The sailplane can be moved at airport by two methods:

- towing the sailplane by a car (max. speed 5 km/h (3 mi/h)) - see FIG.4-7
- towing the sailplane by the manual bar - see FIG.4-8

For towing the sailplane must be equipped with following ground equipment:

1) Underwing carriage, Dwg. G 070 060N (FIG.4-7 and 4-8, pos.1)
2) Transport carriage, Dwg. G 070 050N (FIG.4-7 and 4-8, pos.2)
3) Manual bar, Dwg. G 070 130N (FIG.4-8, pos.3)
4) Bar for car towing, Dwg. G 070 190N (FIG.4-7, pos.4)

To clean and take care of the sailplane outer surface use water with usual soaking agents and usual cleaning and polishing materials. The canopy must be cleaned only with materials approved for organic glass treatment. The canopy may be wiped only with clean soft buckskin or similar soft materials. In no case wipe the canopy dry.

The cockpit should be vacuum-cleaned regularly. For upholstery cleaning use suitable cloth-cleaners according to particular product directions for use.

CAUTION

DO NOT USE GASOLIN, SOLVENTS AND SIMILAR CHEMICALS FOR CLEANING THE CANOPY-GLASS AND OTHER TRANSPARENT PARTS USED IN CONSTRUCTION.

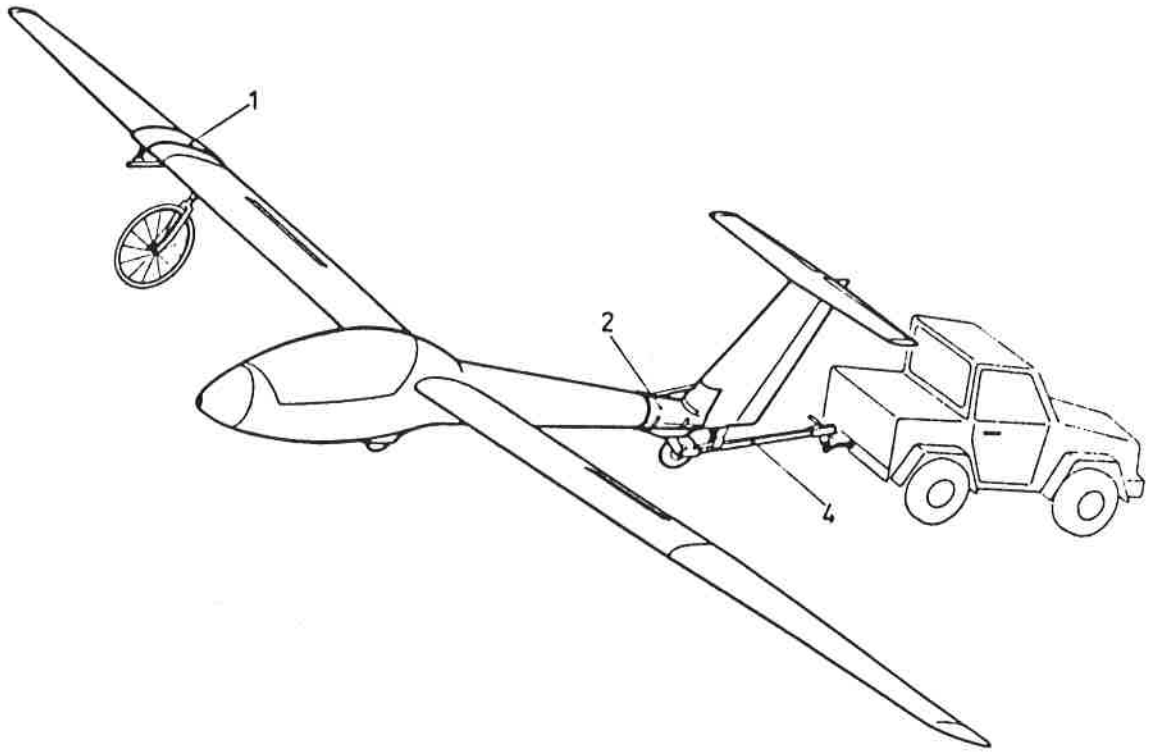


FIG.4 - 7

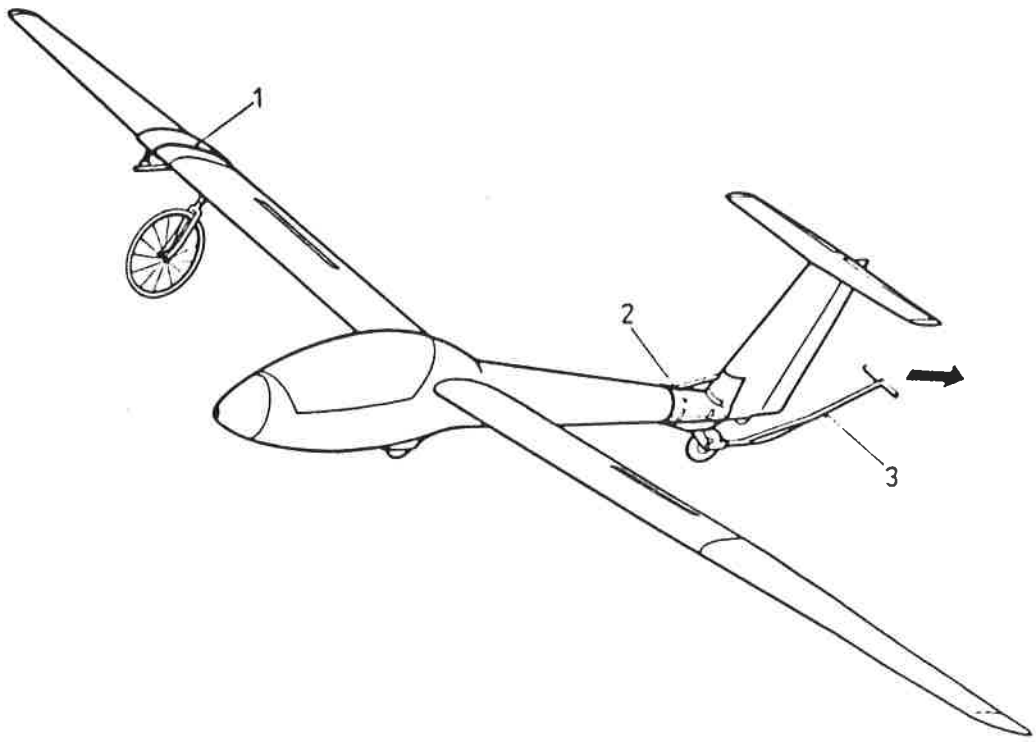


FIG.4 - 8

K. Removal of corrosion of electron light metal parts

The parts used on the sailplane which are made of CSN 42 4911.10 material - electron light metal are more susceptible to corrosion (mainly in seaside areas) and that is why it is necessary to give them the appropriate care both in the operation and during the single inspections. The corrosion occurs on the parts in the form of the white points (beginning of the corrosion), or white or green powder if the corrosion is in a more advanced stage.

Technological procedure:

1. Evaluation of the extent of corrosion occurrence.
   Flat, surface corrosion is not dangerous and it is softly removable. Remove the corrosion which has occurred and which is concentrated in deeper places with scraping the surface to metallic gloss. After scraping consider the condition and determine if the material loss is not detrimental to the strength of the part. The loss of material is not permitted at the attachments eyes. The intergranular corrosion is not permitted, if it is found out replace the part.

2. Corrosion removal.
   Remove the surface corrosion in the form of soft powder with big force by means of the rough rag. Scrape the places with deeper corrosion up to metallic gloss.
   The scraping must not have the sudden transition to adjacent surface areas and it must not form the scores.

3. Surface treatment.
   Passivate the cleaned and degreased places by selenious acid by means of the brush or cotton pad. The acid must not act longer than 48 hours. Coat the part with the S 2003 primer, U 2001 polyurethane primer and then with the U 2052/1100 polyurethane enamel mixed with 5% aluminium powder.

   CAUTION: THE ACID MUST NOT COME INTO CONTACT WITH STEEL PARTS OF THE HINGES (INSERTS, BEARINGS, AND SO ON).

   RECOMMENDATION: It is recommended to spray the light metal parts with RESISTIN agent or equivalent anticorrosion agent during the finishing works with respect to the susceptibility of the light metal parts to corrosion.

5.2.1 OPERATIONAL REPAIRS OF CONTROL SURFACES WITH RESPECT TO FLUTTER PREVENTION

A. General

Control surfaces cannot be mass balanced after repair as they are not designed to enable it. The sailplane is shown to be safe against flutter (in compliance with JAR 22, §22.629) with some margin of safety that allows for some extent of repairs (see Part B) without any check of control surface centre of gravity position. It is sufficient to evaluate the mass increment due to repair (through weighing of control surface before and after repair) and to keep record of the cummulated mass addition (the sum of mass additions due to all repairs formerly made), which must not exceed the "allowed mass addition" specified in Part B). For that reason, every repair must be logged in the Record of Control Surface Service Repairs (see Part E).

Control surface repairs are devided into:

- structure repairs (repair type I)

- all-surface painting (repair type II)

For more details see Part B.

Both types of repairs may be made simultaneously. Nevertheless, each of them must be evaluated, recorded and folowed separately.

In case of damage of the metal skin on aileron or elevator, the eventual repair must be consulted with the manufacturer (non - standard honeycomb design).

B. Allowed repairs of control surfaces and their"allowed mass additions"

Allowed additions are based on flutter analysis and they are related to the control surface condition after dispatch from production works.

Control surface	Type of repair	Allowed mass addition [kg] or [lb]	Description of the repair
Aileron	I	0.150 kg 0.331 lb	- filling of pits in the skin whith epoxy cement (skin not torn) - local repairs of palting
	II	0.326 kg 0.719 lb	- new repair all-surface paltings (approx. 2 coating layers, according to thickness)
Elevator (one half)	I	0.080 kg 0.176 lb	- filling of pits in the skin whith epoxy cement (skin not torn) - local repairs of palting
	II	0.110 kg 0.242 lb	- new repair all-surface paltings (approx. 2 coating layers, according to thickness)
Rudder	I	0.100 kg 0.220 lb	- fabric skin repairs, max. dimensions of patches 300x300 mm - local repairs of painting - replacing ribs and longerons - repair of trailing edge by adding a profile
	II	0.230 kg 0.507 lb	- new repair all-surface paltings (approx. 2 coating layers, according to thickness)

C. Repair procedure

- identify the type of repair(I or II)
- estimate the control surface mass prior to repair
- perform the repair
- estimate the control surface mass after repair
- note the repair into the Record of Service Repairs and evaluate further procedure:

(i)in case that none of the "allowed mass additions" for repair types I,II was exceeded, the operation may continue with repaired control surface.

(ii) in case that one or both "allowed mass additions" for repair types I,II were exceeded, a check on "limit mass characteristics of control surfaces" (see Part D) must be carried out. Further procedure depends on the result of this check.

D. Check of the limit mass characteristics of control surfaces

This check consists of the estimation of a control surface mass M_K[kg] or [lb] and mass moment S_K[kgm] or [lb.ft] related to control surface rotation axis. The centre of gravity position (x_T[m] or [ft],σ_K[%b_K]) of the control surface will be estimated from these values. The measured values should be put down into the Record of Repairs and alworthiness of the control surface should be evalueted:

(i) in case that non of the limit mass characteristics of the control surface (see Table T.1) was exceeded, the control surface may be used for further operation

(ii) in case that some of the limit mass characteristics were exceeded (see Table T.1), it is possible to remove the old paints (or even the fabric skin on rudder), to make a new painting and a new check on limit mass characteristics, incl. entry into the Record of Service Repairs.

- If the control surface meets then the requirements on limit mass characteristics (see Table T.1), it may be used for further operation
- otherwise must the control surface be taken out of service

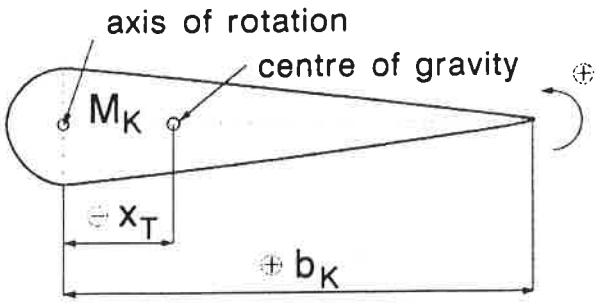
(cont.)

NOTE

Control surfaces that are passed for further service after beeing checked for limit mass characteristics must be checked after every repair (both repair type I and II).

T.1 Table of control surfaces limit mass characteristics for L-33 sailplane

Parameter		Dimension	Aileron (1 piece)	One half of elevator [without central (conect) element]	Rudder
Mass M_K (max.)		[kg]	4.161	1.149	2.078
		[lb]	9.173	2.533	4.581
Mass moment S_k(max.) relative to axis of rotation (⊖surface heavy towards the trailing edge)		[kgm]	−0.19911	−0.06933	−0.17868
		[lb.ft]	−1.44108	−0.50103	−1.29230
Centre of gravity position(max.) (⊖ behind the axis of rotation)	x_T	[m]	−0.0479	−0.0603	−0.0860
		[ft]	−0.1571	−0.1978	−0.2821
	σ_K	[%b_K]	−27.66	−43.10	−32.57
Mean geometric chord b_K ofthe surface behind the axis of rotation		[m]	0.173	0.140	0.264
		[ft]	0.568	0.459	0.866



$$x_T\,[m]([ft]) = \frac{S_K\,[kgm]([lb.ft])}{M_K\,[kg]([lb])}$$

$$\sigma_K\,[\%b_K] = \frac{x_T\,[m]([ft])}{b_K\,[m]([ft])} \times 100$$

E. Record on service repairs of L-33 sailplane control surfaces,specimen

Control surface: **Aileron right**						
Control surface serial number:			Sequence number of the repair			
Sailplane serial number:			1	2	3	4
Repair type I:Allowed mass addition **0.150kg (0.331lb)**						
(1)	Date					
(2)	Brief description of the repair					
(3)	Cumulated mass addition due to repair [item(7) from perious repair]	[kg]([lb])	0.000			
(4)	Control surface mass before repair	[kg]([lb])				
(5)	Control surface mass after repair	[kg]([lb])				
(6)	Mass addition due to repair[(5)−(4)]	[kg]([lb])				
(7)	Cumulated mass addition after repair [(3) + (6)]	[kg]([lb])				
(8)	Decision on further operation: (7) < 0.150kg (0.331lb) ➨ **YES** (7) > 0.150kg (0.331lb) ➨ **NO**					
Repair type II:Allowed mass addition **0.326kg (0.719lb)**						
(9)	Date					
(10)	Brief description of the repair					
(11)	Cumulated mass addition due to repair [item(15) from perious repair]	[kg]([lb])	0.000			
(12)	Control surface mass before repair	[kg]([lb])				
(13)	Control surface mass after repair	[kg]([lb])				

(cont.)

Control surface: **Aileron right**						
Control surface serial number:			Sequence number of the repair			
Saiplane serial number:			1	2	3	4
(14)	Mass addition due to repair [(13)−(12)]	[kg]([lb])				
(15)	Cumulated mass addition after repair [(11)+(14)]	[kg]([lb])				
(16)	Decision on further operation: (15) < 0.326kg (0.719lb) ⇒ **YES** (15) > 0.326kg (0.719lb) ⇒ **NO**					
	Check on control surface limit mass characteristics [To be performed if at least one of allowed mass additions: (7) > 0.150kg (0.331lb) or (15) > 0.326kg (0.719lb)]					
(17)	M_K	[kg]([lb])				
(18)	S_K	[kgm]([lb.ft])				
(19)	x_T	[m]([ft])				
(20)	σ_K	[%b_K]				
(21)	Decision on further service of the control surface: (according to Table T.1 in Part D) **YES** - none of the limit characteristics was exceeded **NO** - some of the limit characteristics was exceeded					
(22)	Remark					
(23)	Name Signature					

NOTE

In case that number of repairs is greater than 4 the Record form should be extended

Control surface: **Aileron left**						
Control surface serial number:			Sequence number of the repair			
Sailplane serial number:			1	2	3	4
Repair type I:Allowed mass addition **0.150kg (0.331lb)**						
(1)	Date					
(2)	Brief description of the repair					
(3)	Cumulated mass addition due to repair [Item(7) from perious repair]	[kg]([lb])	0.000			
(4)	Control surface mass before repair	[kg]([lb])				
(5)	Control surface mass after repair	[kg]([lb])				
(6)	Mass addition due to repair[(5)−(4)]	[kg]([lb])				
(7)	Cumulated mass addition after repair [(3)+(6)]	[kg]([lb])				
(8)	Decision on further operation: (7)<0.150kg (0.331lb) ➠ **YES** (7)>0.150kg (0.331lb) ➠ **NO**					
Repair type II:Allowed mass addition **0.326kg (0.719lb)**						
(9)	Date					
(10)	Brief description of the repair					
(11)	Cumulated mass addition due to repair [item(15) from perious repair]	[kg]([lb])	0.000			
(12)	Control surface mass before repair	[kg]([lb])				
(13)	Control surface mass after repair	[kg]([lb])				

(cont.)

Control surface: **Aileron left**						
Control surface serial number:			Sequence number of the repair			
Sailplane serial number:			1	2	3	4
(14)	Mass additon due to repair [(13)–(12)]	[kg]([lb])				
(15)	Cumulated mass additon after repair [(11)+(14)]	[kg]([lb])				
(16)	Decision on further operation: (15)<0.326kg (0.719lb) ⇒ **YES** (15)>0.326kg (0.719lb) ⇒ **NO**					
Check on control surface limit mass characteristics [To be performed if at least one of allowed mass additions: (7)>0.150kg (0.331lb) or (15)>0.326kg (0.719lb)]						
(17)	M_K	[kg]([lb])				
(18)	S_K	[kgm]([lb.ft])				
(19)	x_T	[m]([ft])				
(20)	σ_K	[%b_K]				
(21)	Decision on further service of the control surface : (according to Table T.1 in Part D) **YES** - none of the limit characteristicswas exceeded **NO** - some of the limit characteristics was exceeded					
(22)	Remark					
(23)	Name signature					

NOTE

In case that number of repairs is greater than 4 the Record form should be extended

Control surface: **Right elevator**						
Control surface serial number:			Sequence number of the repair			
Sailplane serial number:			1	2	3	4
Repair type I:Allowed mass addition **0.080kg (0.176lb)**						
(1)	Date					
(2)	Brief description of the repair					
(3)	Cumulated mass addition due to repair [item(7) from perious repair]	[kg]([lb])	0.000			
(4)	Control surface mass before repair	[kg]([lb])				
(5)	Control surface mass after repair	[kg]([lb])				
(6)	Mass addition due to repair[(5)−(4)]	[kg]([lb])				
(7)	Cumulated mass addition after repair [(3) + (6)]	[kg]([lb])				
(8)	Decision on further operation: (7) < 0.080kg (0.176lb) ⇒ **YES** (7) > 0.080kg (0.176lb) ⇒ **NO**					
Repair trype II:Allowed mass addition **0.110kg (0.242lb)**						
(9)	Date					
(10)	Brief description of the repair					
(11)	Cumulated mass addition due to repair [item(15) from perious repair]	[kg]([lb])	0.000			
(12)	Control surface mass before repair	[kg]([lb])				
(13)	Control surface mass after repair	[kg]([lb])				

(cont.)

Control surface: **Right elevator**						
Control surface serial number:			Sequence number of the repair			
Sailplane serial number:			1	2	3	4
(14)	Mass addition due to repair [(13)−(12)]	[kg]([lb])				
(15)	Cumulated mass addition after repair [(11)+(14)]	[kg]([lb])				
(16)	Decision on further operation: (15) < 0.110kg (0.242lb) ⇒ **YES** (15) > 0.110kg (0.242lb) ⇒ **NO**					
	Check on control surface limit mass characteristics [To be performed if at least one of allowed mass additions: (7) > 0.080kg (0.176lb) or (15) > 0.110kg (0.242lb)]					
(17)	M_K	[kg]([lb])				
(18)	S_K	[kgm]([lb.ft])				
(19)	x_T	[m]([ft])				
(20)	σ_K	[%b_K]				
(21)	Decision on further service of the control surface: (according to Table T.1 in Part D) **YES** - none of the limit characteristics was exceeded **NO** - some of the limit characteristics was exceeded					
(22)	Remark					
(23)	Name Signature					

NOTE

In case that number of repairs is greater than 4 the Record form should be extended

Control surface: **Left elevator**						
Control surface serial number:			Sequence number of the repair			
Sailplane serial number:			1	2	3	4
Repair type I:Allowed mass addition **0.080kg (0.176lb)**						
(1)	Date					
(2)	Brief description of the repair					
(3)	Cumulated mass addition due to repair [item(7) from perious repair]	[kg]([lb])	0.000			
(4)	Control surface mass before repair	[kg]([lb])				
(5)	Control surface mass after repair	[kg]([lb])				
(6)	Mass addition due to repair[(5)−(4)]	[kg]([lb])				
(7)	Cumulated mass addition after repair [(3) + (6)]	[kg]([lb])				
(8)	Decision on further operation: (7) < 0.080kg (0.176lb) ⇒ **YES** (7) > 0.080kg (0.176lb) ⇒ **NO**					
Repair type II:Allowed mass addition **0.110kg (0.242lb)**						
(9)	Date					
(10)	Brief description of the repair					
(11)	Cumulated mass addition due to repair [item(15) from perious repair]	[kg]([lb])	0.000			
(12)	Control surface mass before repair	[kg]([lb])				
(13)	Control surface mass after repair	[kg]([lb])				

(cont.)

Control surface: **Left elevator**						
Control surface serial number:			Sequence number of the repair			
Sailplane serial number:			1	2	3	4
(14)	Mass addition due to repair [(13)−(12)]	[kg]([lb])				
(15)	Cumulated mass addition after repair [(11)+(14)]	[kg]([lb])				
(16)	Decision on further operation: (15)<0.110kg (0.242lb) ⇒ **YES** (15)>0.110kg (0.242lb) ⇒ **NO**					
	Check on control surface limit mass characteristics [To be performed if at least one of allowed mass additions: (7)>0.080kg (0.176lb) or (15)>0.110kg (0.242lb)]					
(17)	M_K	[kg]([lb])				
(18)	S_K	[kgm]([lb.ft])				
(19)	x_T	[m]([ft])				
(20)	σ_K	[%b_K]				
(21)	Decision on further service of the control surface: (according to Table T.1 in Part D) **YES** - none of the limit characteristics was exceeded **NO** - some of the limit characteristics was exceeded					
(22)	Remark					
(23)	Name Signature					

NOTE

In case that number of repairs is greater than 4 the Record form should be extended

Control surface: **Rudder**						
Control surface serial number:			Sequence number of the repair			
Sailplane serial number:			1	2	3	4
Repair type I:Allowed mass addition **0.100kg (0.220lb)**						
(1)	Date					
(2)	Brief description of the repair					
(3)	Cumulated mass addition due to repair [item(7) from perious repair]	[kg]([lb])	0.000			
(4)	Control surface mass before repair	[kg]([lb])				
(5)	Control surface mass after repair	[kg]([lb])				
(6)	Mas addition due to repair[(5)−(4)]	[kg]([lb])				
(7)	Cumulated mass addition after repair [(3)+(6)]	[kg]([lb])				
(8)	Decision on further operation: (7)<0.100kg (0.220lb) ⇒ **YES** (7)>0.100kg (0.220lb) ⇒ **NO**					
Repair type II:Allowed mass addition **0.230kg (0.507lb)**						
(9)	Date					
(10)	Brief description of the repair					
(11)	Cumulated mass addition due to repair [item(15) from perious repair]	[kg]([lb])	0.000			
(12)	Control surface mass before repair	[kg]([lb])				
(13)	Control surface mass after repair	[kg]([lb])				

(cont.)

Control surface: **Rudder**						
Control surface serial number:			Sequence number of the repair			
Sailplane serial number:			1	2	3	4
(14)	Mass addition due to repair [(13) – (12)]	[kg] ([lb])				
(15)	Cumulated mass addition after repair [(11) + (14)]	[kg] ([lb])				
(16)	Decision on further operation: (15) < 0.230kg (0.507lb) ⇒ **YES** (15) > 0.230kg (0.507lb) ⇒ **NO**					
Check on control surface limit mass characteristics [To be performed if at least one of allowed mass additions: (7) > 0.100kg (0.220lb) or (15) > 0.230kg (0.507lb)]						
(17)	M_K	[kg] ([lb])				
(18)	S_K	[kgm] ([lb.ft])				
(19)	x_T	[m] ([ft])				
(20)	σ_K	[%b_K]				
(21)	Decision on further service of the control surface: (according to Table T.1 in Part D) **YES** - none of the limit characteristics was exceeded **NO** - some of the limit characteristics was exceeded					
(22)	Remark					
(23)	Name Signature					

NOTE

In case that number of repairs is greater than 4 the Record form should be extended

5.3 SPARE PARTS STORAGE

A. General

Spare parts are stored under the following conditins:

- components, instruments and assemblies shall be stored in original packings
- rubber and rubber components shall be stored separately, that is, separated from electrical instruments and units
- storing spaces must have chemically neutral atmosphere with a maximum relative humidity up to 70%. The storing equipment and storing must conform to the storekeeping
- the airborne instruments shall be stored in an air-conditioned store-room at the temperature of 10°C to 30°C, with a daily deviation of max. 4°C and relative humidity up to 70%
- if the above values are exceeded, check the rust prevention of the component and of the instrument, and renew it, if required.

5.4 TEST FLIGHT

A. General

Flight-test the sailplane after a relevant type of periodical maintenance and after a major repair or replacement of essential parts of assemblies, affecting the flight characteristic and airworthiness.

a) Test conditions

(1) Determine the sailplane weight and center of gravity according to the Weight and Balance Record.

(2) All flights should comply with the limitations specified in the L 33 Flight Manual.

(3) Atmospheric conditions:
- Minimum height of the cloud base above the ground 1000 m (3279 ft)
- Flight visibility: 3 km or more

b) Aerotow (Flight I)

(1) Climb to an altitude of 700-1200 m (2300+4000 ft) above the ground, checking the sailplane behaviour during climb and tow.

(2) Check instrument functions

(3) Check the release mechanism under reasonable load

(4) Check the never exceed speed (check flight characteristics, control forces and air brakes in flush with airfoil contour).

(5) Check stalling characteristic in landing configuration, controllability, minimum safety speed.

(6) Check stall-warning and possibility to maintain the roll of the sailplane after the stalling speed has been achieved, or after the elevator has reached the stop.

(7) Check the sailplane behaviour during the left and right spin.

(8) Check trim and balance of the sailplane at gliding. Check for the minimum trim speed 77 km/h at the maximum take-off weight and the front centre of gravity position.

(9) Check controllability at basic aerobatic manoeuvres

(10) Check both right and left sideslip

(11) Check the sailplane behaviour at landing. Check the brake efficiency.

(12) Instruments, units and systems are checked during whole flight test.

c) Winch launch (Flight II)

(1) Check the behaviour of the sailplane at the winch launch.

(2) Check the sufficient deflection reserve of the elevator.

(3) Check automatic release of the cable.

d) Test flying results:

Enter the values and results of the test flight on the table ,on which the test flight record is based.

6.1 EQUIPMENT/FURNISHING LIST

A. Safety belts

The sailplane is equipped with four-point safety belts. The following safety belts are approved:

	Type	Manufacturer	Technical specification
1.	990-417-00	Moravan OTROKOVICE	TPF 01-5377-92

B. Instrument

Conditions for operation, servicing, maintenance and repair and possible limitations contained in product certificates must be followed.

a) Minimum equipment

	Instrument	Type	Weight lb (kg)	Technical specification
1.	Airspeed indicator	LUN 1106.21-8	0.88 (0.40)	TPF 01-3028-61
2.	Vertical speed indicator ±5 m/s	LUN 1141	1.06 (0.48)	TP 0021-04-55
3.	Altimeter	LUN 1124.01	1.87 (0.85)	TPF 01-3601-82
		or UI 5934P-3	0.90 (0.41)	Code A83 TSO C10b
4.	Mag. direction indicator	LUN 1225	0.22 (0.10)	TPF 01-7036-93

b) Optional equipment

	Instrument	Type	Weight lb (kg)	Technical specification
1.	Electric turn and bank/side indicator	LUN 1211.1	0.79 (0.36)	TPF 0177-04-59
2.	Vertical speed indicator ± 30m/s	LUN 1147.10-8	1.1 (0.50)	TPF 01-3025-60
3.	Accelerometer	AM-10	0.55 (0.25)	TPF 01-62

C. Transceiver

Conditions for operation, servicing, maintenance and repair and possible limitations contained in product certificates must be followed.

	Type	Manufacturer	Technical specification
1.	AR 3201 (AR 4201)	Becker	10.911/76

D. Equipmment

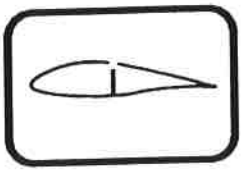
	Type	Weight lb (kg)	Manufacturer
1.	TOST G 88/1-83 lower hook	1.98 (0.90)	TOST GmbH FLUGZEUGGERÄTEBAU MÜNCHEN
2.*	TOST E 85/1-85 forward hook(if installed)	1.76 (0.80)	same manufacturer

7.1 EXTERIOR MARKINGS (FIG. 7-1, 7-2)

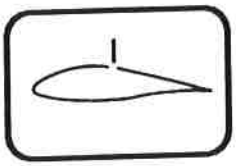
TIRE PRESSURE 28 + 7 psi (200 +50 kPa)	main tire pressure- on the right-hand side of the fuselage
TIRE PRESSURE 17 + 3 psi (120 +20 kPa)	tail tire pressure- on the right-hand side of the fuselage
LIFT HERE	the point in which the sailplane may be supported
DO NOT PRESS HERE	locations sensitive to pressure
Registration mark	on the underside of the left hand wing
Red circle	all levelling points
STAT	near the static pressure sensor
Red line	check of correct horizontal position of compensated pressure sensor
UNLOCKED	the position in which the pin jointing the horizontal tail plane to the fin is unlocked
LOCKED	the position in which the pin jointing the horizontal tail plane to the fin is locked

MARKING (English version)	MARKING (Spanish version)
Tire pressure 28 + 7 psi (200 +50 kPa)	Presión del neumático 28 + 7 psi
Tire pressure 17 + 3 psi (120 +20 kPa)	Presión del neumático 17 + 3 psi
Lift here	Levante aqui
Do not press here	No presionar aqui
STAT	Linea estática. Mantener limpia
Unlocked	Destrabado
Locked	Trabado

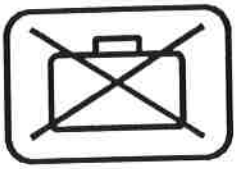
7.2 INTERIOR PLACARDS AND MARKINGS



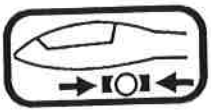
AIR BRAKES
RETRACTED
(FIG. 7-4)



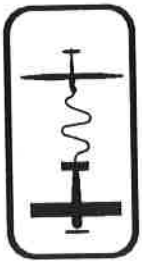
AIR BRAKES
EXTENDED
(FIG. 7-4)



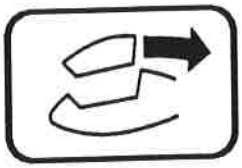
DO NOT PUT
BAGGAGE
(FIG. 7-5)



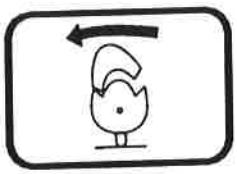
WHEEL
BRAKE
(FIG. 7-3)



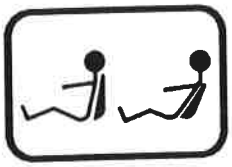
RELEASE
(FIG. 7-6)



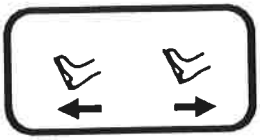
CANOPY
JETTISON
(FIG. 7-3)



CANOPY
OPEN
(FIG. 7-4)



SEAT BACK
(FIG. 7-3)



PEDAL
ADJUSTMENT
(FIG. 7-6)

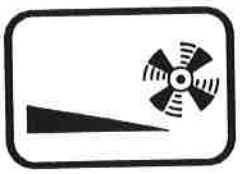
OPERATING LIMITATIONS

THE MARKINGS AND PLACARDS INSTALLED IN THIS SAILPLANE CONTAIN OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING IN UTILITY CATEGORY. OTHER LIMITATIONS ARE CONTAINED IN SAILPLANE FLIGHT MANUAL.

MAX. GROSS WEIGHT	**750 LB**
EMPTY WEIGHT, STANDARD	**463 LB**

APPROVED MANOEUVRES:

STEEP TURN	**LOOP**
CHANDELLE(CLIMBING)	**STALL TURN**
LAZY EIGHT	**SPIN**



AIR VENT (FIG. 7-3)

or

OPERATING LIMITATIONS

THE MARKINGS AND PLACARDS INSTALLED IN THIS SAILPLANE CONTAIN OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING IN UTILITY CATEGORY. OTHER LIMITATIONS ARE CONTAINED IN SAILPLANE FLIGHT MANUAL.

MAX. GROSS WEIGHT	**340 kg**
EMPTY WEIGHT, STANDARD	**210 kg**

APPROVED MANOEUVRES:

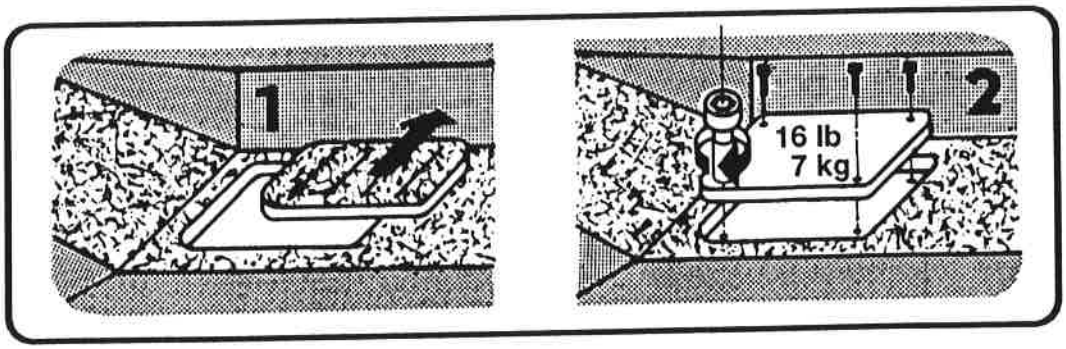
STEEP TURN	**LOOP**
CHANDELLE(CLIMBING)	**STALL TURN**
LAZY EIGHT	**SPIN**

(FIG. 7-5)

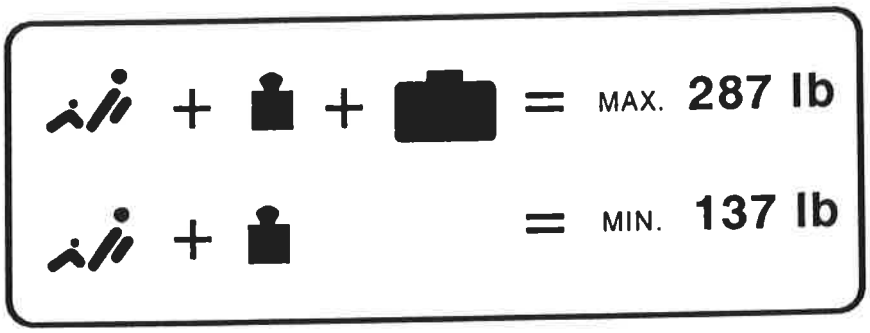
or

(FIG. 7-5)

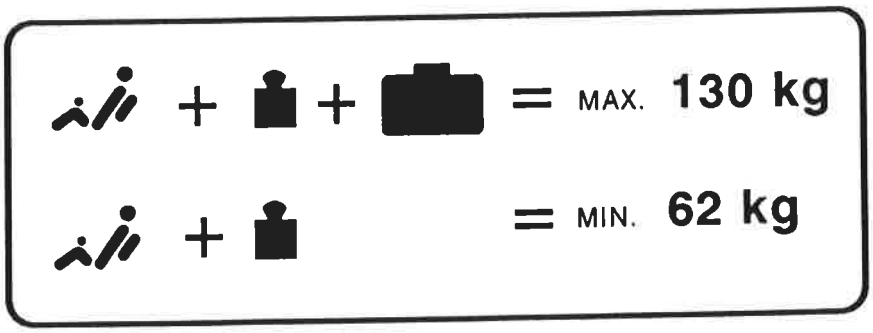
(FIG. 7-5)



(FIG. 7-5)



or



(FIG. 7-5)

MAX. ALLOWABLE SPEED VS ALTITUDE					
PRESSURE ALTITUDE (ft) UP TO	15 000	20 000	25 000	30 000	35 000
SPEED KIAS, MAX.	134	131	129	127	125

or

MAX. ALLOWABLE SPEED VS ALTITUDE						
PRESSURE ALTITUDE (m) UP TO	5 000	6 000	7 000	8 000	9 000	10000
SPEED km/h IAS, MAX.	246	243	241	238	235	233

(FIG. 7-4)

MAX. WINCH LAUNCHING SPEED	70 KIAS
MAX. AEROTOWING SPEED	85 KIAS
MAX. MANOEUVRING SPEED	85 KIAS

or

MAX. WINCH LAUNCHING SPEED	130 km/h IAS
MAX. AEROTOWING SPEED	158 km/h IAS
MAX. MANOEUVRING SPEED	158 km/h IAS

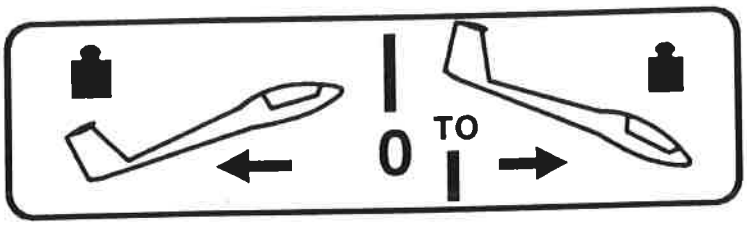
(FIG. 7-6)

V_{NE} . . . . 134 KIAS
V_{RA} . . . . . 85 KIAS

or

V_{NE} . . . . 248 km/h IAS
V_{RA} . . . . . 158 km/h IAS

(FIG. 7-6)



TRIMMER
(FIG. 7-5)

CENTRE OF GRAVITY RANGE	
FRONT LIMIT	21 % MAC
REAR LIMIT	39 % MAC

(FIG. 7-6)

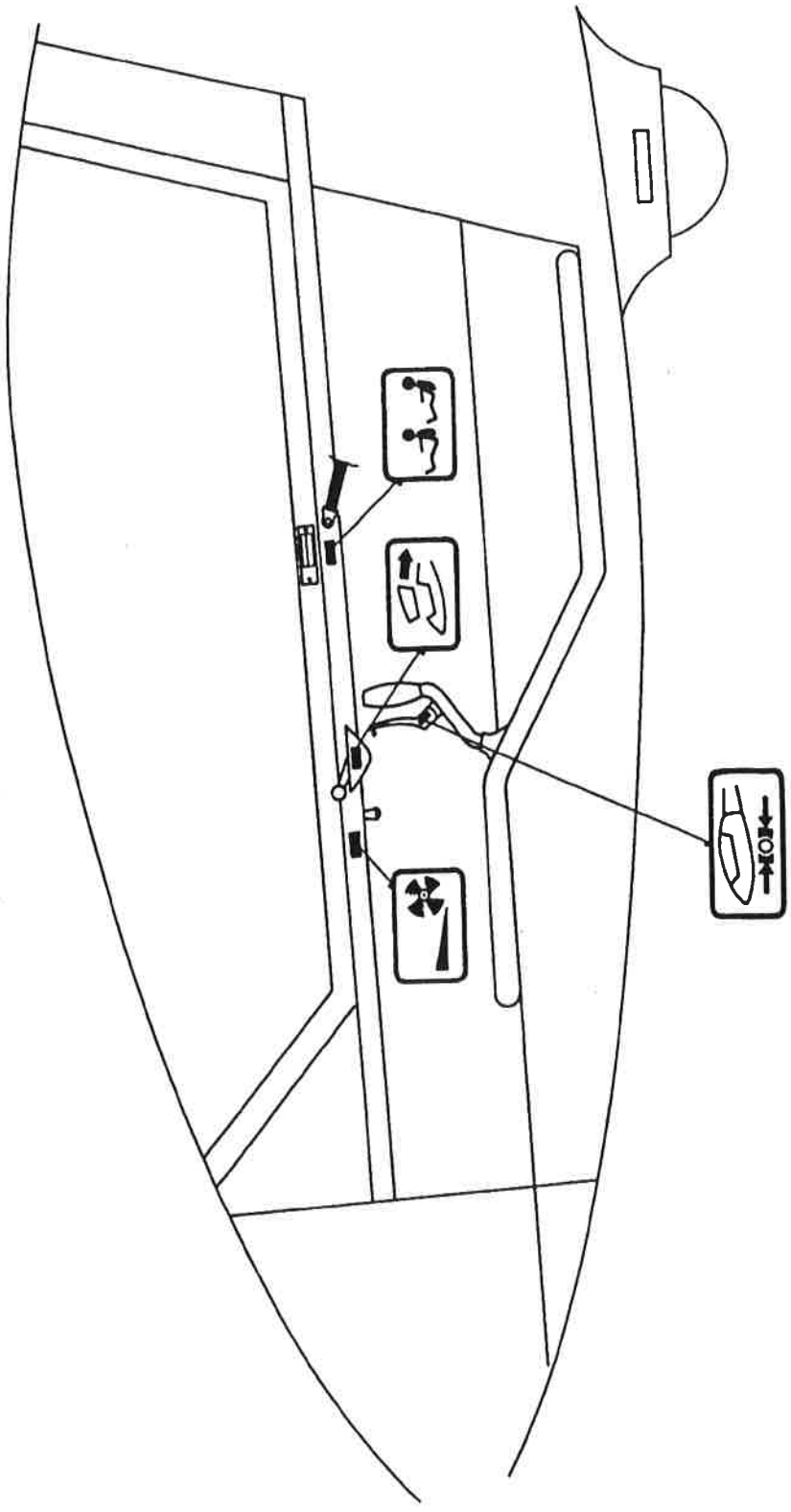


FIG. 7 - 3

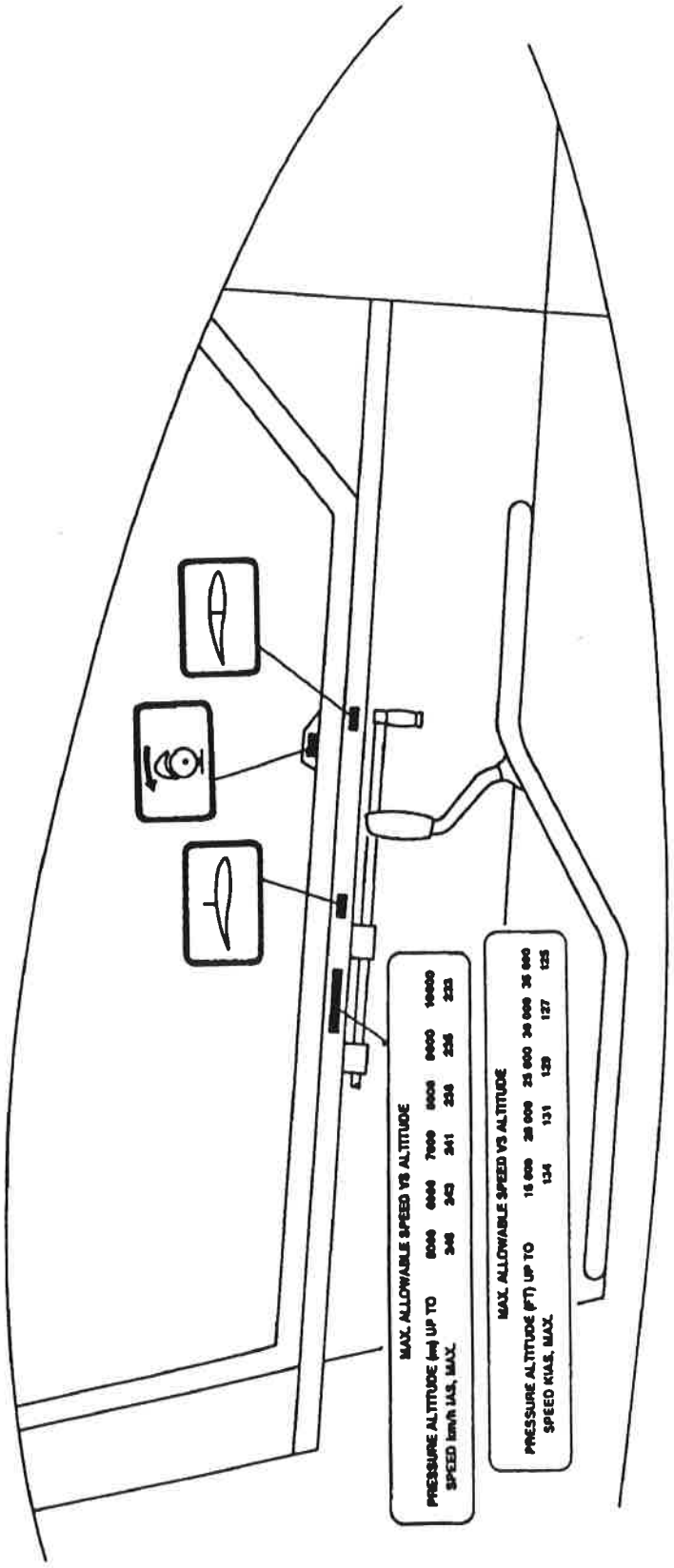

MAX. ALLOWABLE SPEED VS ALTITUDE
PRESSURE ALTITUDE (m) UP TO
SPEED km/h IAS, MAX.
MAX. ALLOWABLE SPEED VS ALTITUDE
PRESSURE ALTITUDE (FT) UP TO
SPEED KIAS, MAX.

FIG. 7 - 4

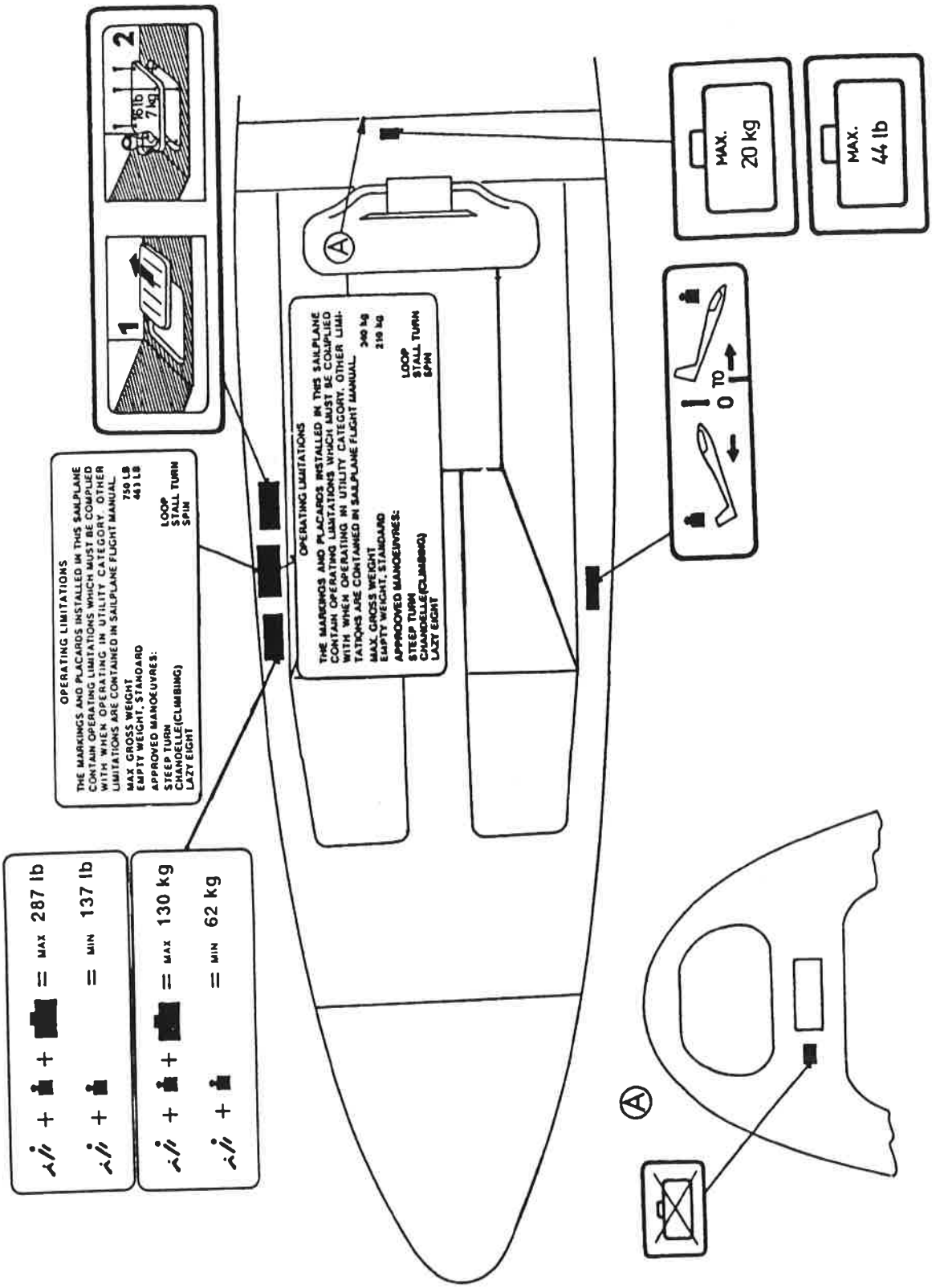

OPERATING LIMITATIONS
THE MARKINGS AND PLACARDS INSTALLED IN THIS SAILPLANE CONTAIN OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING IN UTILITY CATEGORY. OTHER LIMITATIONS ARE CONTAINED IN SAILPLANE FLIGHT MANUAL
MAX. GROSS WEIGHT 750 LB
EMPTY WEIGHT, STANDARD 443 LB
APPROVED MANOEUVRES: LOOP
STEEP TURN STALL TURN
CHANDELLE(CLIMBING) SPIN
LAZY EIGHT
OPERATING LIMITATIONS
THE MARKINGS AND PLACARDS INSTALLED IN THIS SAILPLANE CONTAIN OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING IN UTILITY CATEGORY. OTHER LIMITATIONS ARE CONTAINED IN SAILPLANE FLIGHT MANUAL.
MAX. GROSS WEIGHT 340 kg
EMPTY WEIGHT, STANDARD 210 kg
APPROOVED MANOEUVRES:
STEEP TURN LOOP
CHANDELLE(CLIMBING) STALL TURN
LAZY EIGHT SPIN
MAX. 20 kg
MAX. 44 lb
TO
= MAX 287 lb
= MIN 137 lb
= MAX 130 kg
= MIN 62 kg

FIG. 7 - 5

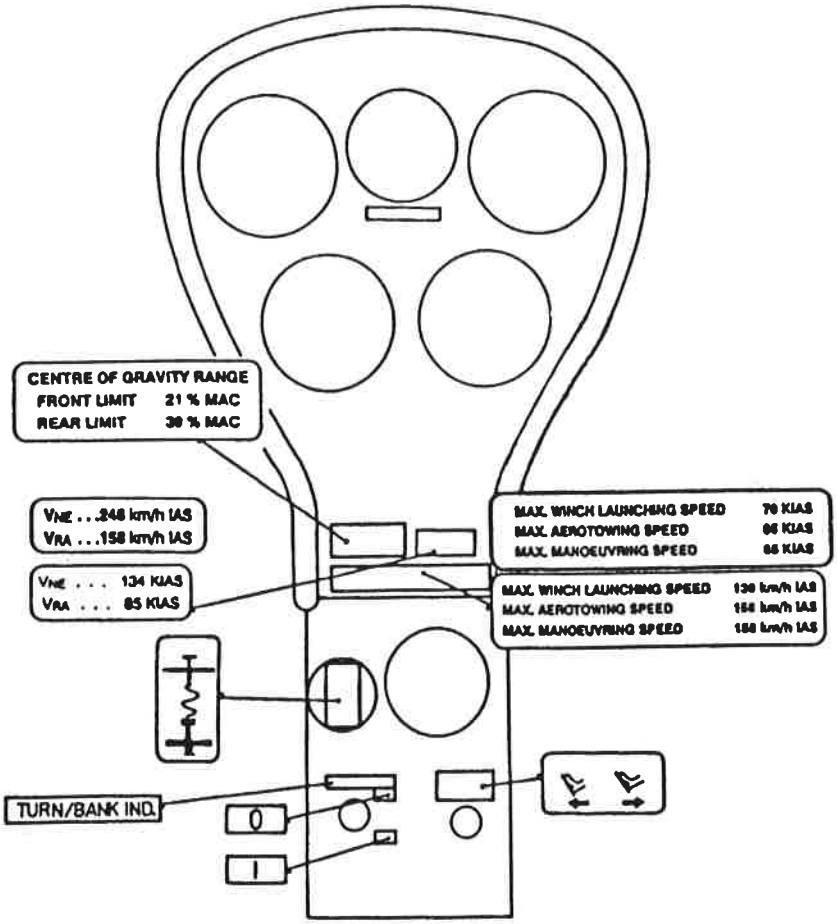
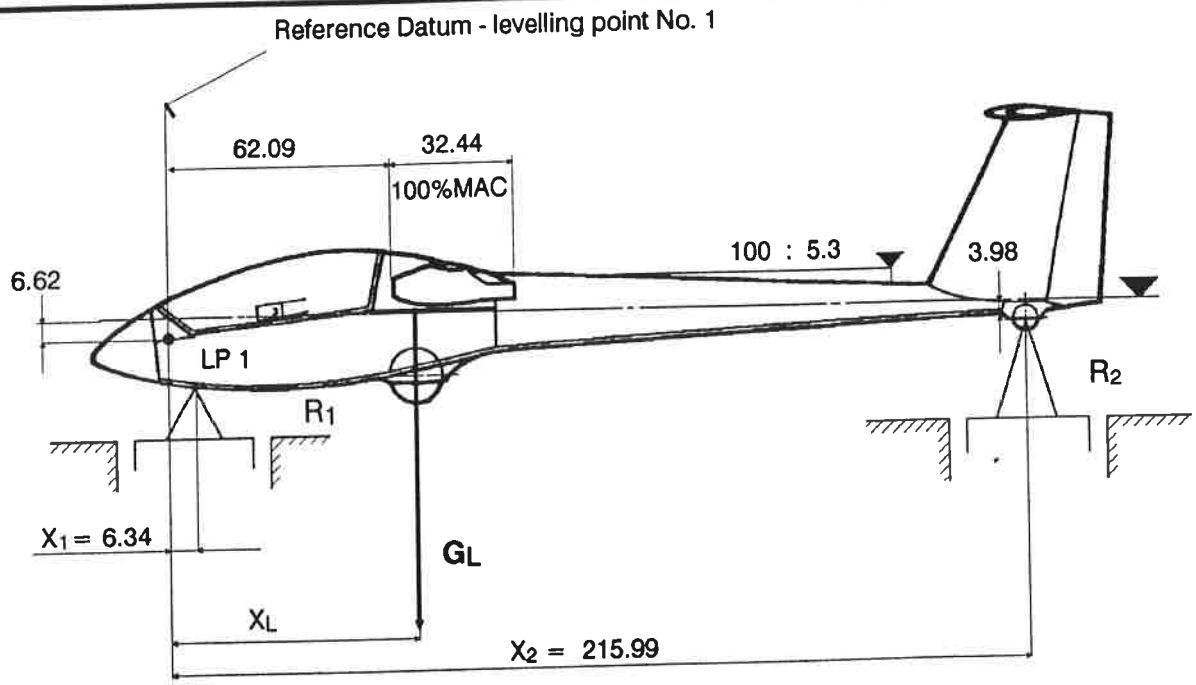

CENTRE OF GRAVITY RANGE
FRONT LIMIT 21 % MAC
REAR LIMIT 30 % MAC
VNE . . .248 km/h IAS
VRA . . .158 km/h IAS
VNE . . . 134 KIAS
VRA . . . 85 KIAS
MAX. WINCH LAUNCHING SPEED 70 KIAS
MAX. AEROTOWING SPEED 95 KIAS
MAX. MANOEUVRING SPEED 95 KIAS
MAX. WINCH LAUNCHING SPEED 130 km/h IAS
MAX. AEROTOWING SPEED 158 km/h IAS
MAX. MANOEUVRING SPEED 158 km/h IAS
TURN/BANK IND.

FIG. 7 - 6

SUPPLEMENT No. 1

WEIGHT AND BALANCE RECORD L 33 SOLO



Type	L 33
Manufactured by	LET, a.s. Kunovice
Serial number	
Registration mark	

The sailplane weighed on supports.All dimension are in inches.

A . Values obtained by weighing in lb

	Masses			Dimension
	gross	tare	net	
R_1				$X_1 = 6.34$ in
R_2				$X_2 = 215.99$ in
G_L				

B . Values obtained by calculation - centre-of-gravity position of the empty sailplane

a) Relative to the reference plane	b) Relative to the mean aerodyn. chord
$X_L = \frac{R_1 \times 6.34 + R_2 \times 215.99}{G_L}$	$\bar{X}_T = \frac{(X_L - 62.09) \times 100\%}{32.44}$
$X_L =$ in	$\bar{X}_T =$ %MAC

The centre - of - gravity position of the empty sailplane calculated in Part B meets the sailplane specifications,and makes it posible to achieve the reguired operational (flight) centre - of - gravity range from 21 ÷ 39 % MAC.

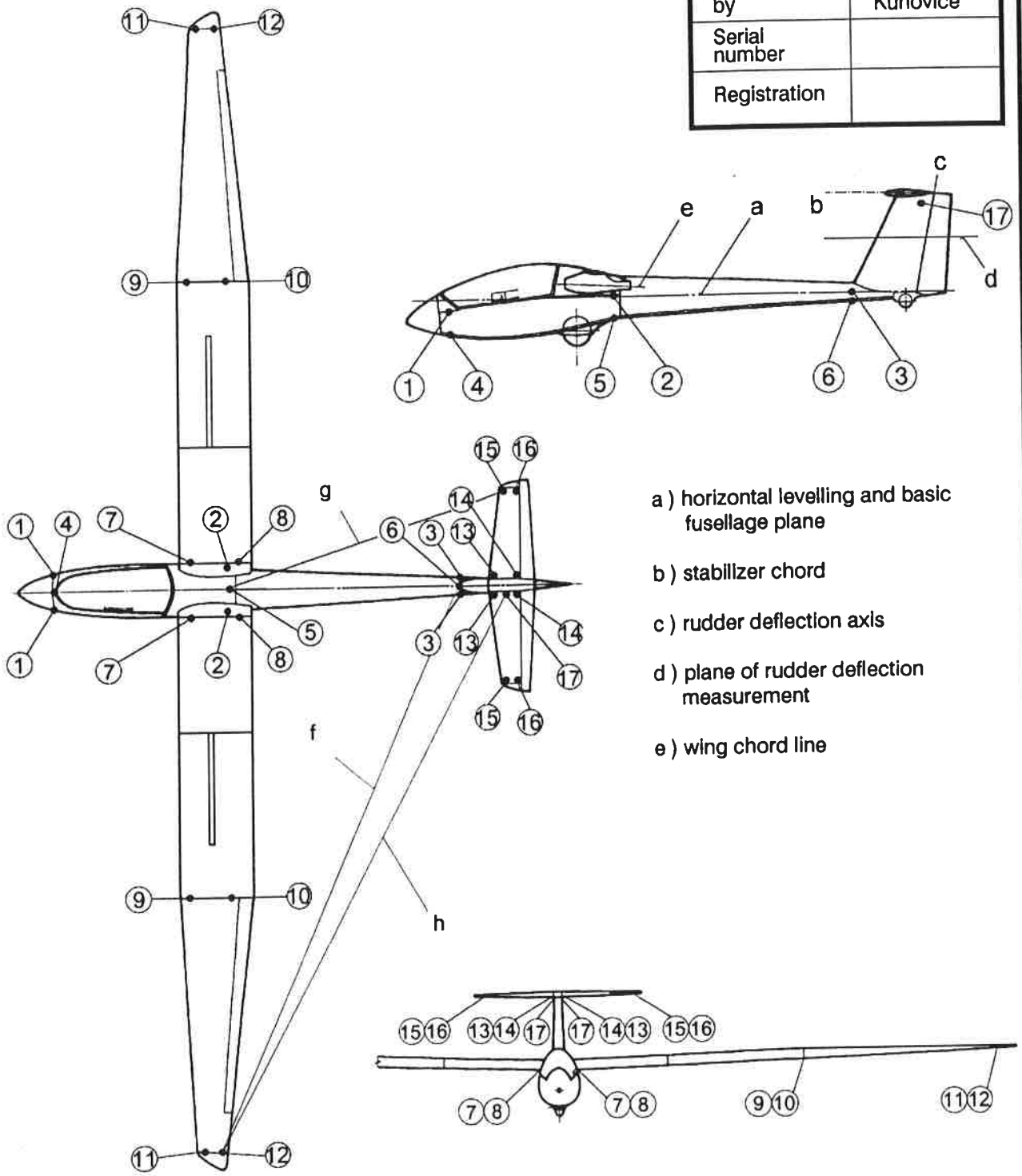
..... Date

..... Elaborated by

SUPPLEMENT No. 2

LEVELLING RECORD L 33 SOLO

Type	L 33
Manufactured by	LET, a.s. Kunovice
Serial number	
Registration	



a) horizontal levelling and basic fusellage plane

b) stabilizer chord

c) rudder deflection axis

d) plane of rudder deflection measurement

e) wing chord line

FIXING OF THE GLIDER INS LEVELLING:

Lateral - as per levelling point No.9 LH and No.9 RH - diference 0

Longitudinal - as per levelling point No.2 LH and No.3 LH - see table

..... Production Quality Control		Page No.: 1 Pages : 3	..... Date

VERTICAL MEASUREMENTS

Serial No. . . . . .

Measurements	Level point No.	Theoretical values [mm]			Measured values[mm]			
					to the left		to the right	
		Value	Difference	Tole-rance	Value	Difference	Value	Difference
Fuselage	1	– 173	0	±3				
	2	0	0	0				
	3	0	0	0				
Wing	7	89.5	7 – 8 – 6.5	±2				
	8	96						
	9	271	9 – 10 – 6	±2				
	10	277						
	11	454	11 – 12 –7.5	+2 – 1				
	12	461.5						
Stabilizer	13	1 170	13 – 14 6	±2				
	14	1 164						
	15	1 179.5	15 – 16 1	±2				
	16	1 178.5						
Dihedral *	11–7	364.5		–7 –23				
Stabilizer adjustment **	15	1179.5	0	±5				

HORIZONTAL MEASUREMENTS

Vertical plane - sailplane axis	Deflection of levelling point No. 5 from axis connecting the levelling point No. 4, 6 ± 5 mm.		
Wing position to sailplane axis	Distance f between levelling point No. 12, 6 LH side – RH side max. 20 mm	LH side RH side	
Stabilizer position to sailplane axis	Distance g between levelling point No. 5, 15 LH side – RH side max. 20 mm	LH side RH side	
Fin position to wing	Distance h between levelling point 12, 17 LH side – RH side max. 20 mm	LH side RH side	

Note:
Theoretical values in the wing rigging points do not include the deflection due to weight of the wing.
Dimensions marked ⊕ = are understood on the left hand side of sailplane axis, ⊖ = to the right = below basic fuselage plane

* Difference LH side – RH side max. 10 mm

** Difference LH side – RH side max. 8 mm

..... Production Quality Control		Page No. : 2 Pages : 3	..... Date

TABLE OF CONTROL SURFACE DEFLECTION SAILPLANE Serial No. . . . . .

Measurements	Deflection	Stated deflection[°]	Measured deflection[°]		Note
			LH side	RH side	
Elevator	up	$25^{\circ}+1^{\circ}$			
	down	$15^{\circ}+1^{\circ}$			
Ailerons	up	$26^{\circ}+1^{\circ}\,30'$			
	down	$15^{\circ}\pm1^{\circ}$			
Rudder	L,R	$25^{\circ}+2^{\circ}$			

Difference between LH and RH elevator trailing edges(max.3mm). Deflection of elevator measured on the left side (FIG. 1-2).

Control stick axis position from instrument panel - elevator - 0° (205 ± 5 mm), (FIG. 1-3).

Twist of aileron installed in wing : aling wing and aileron trailing edges in position of rib No.9,at rib No.14: ±3 mm. L/R, (FIG. 1-8).

Extension of air brakes - distance between the wing skin at main spar and air brake hollow pin axis 70 ± 5 mm. L/R, (FIG. 1-9).

Air brakes locking (handle in the cockpit) 30 ÷ 40 mm, (FIG. 1-10). The force needed for locking air brakes: 100 ÷ 130 N.

Wing pin washer - drawing No. G 010 022 N ÷ G 010 033 N :

Thickness of the washer LEFT [mm]	Thickness of the washer RIGHT [mm]	Date instalation/change	Elaborated by

SUPPLEMENT No.4

DESCRIPTION AND OPERATION OF BATTERY NKDU 10 OR NKDU 10R

BATTERY - DESCRIPTION

The battery consists of metal, hermetically closed box in which is located ten NKDU 10 or NKDU 10R cells interconnected by means of flat bridges in series so that the battery voltage is 12 V. There is connector on the box and fuse on the fuse holder.
NKDU 10 or NKDU 10R cells are arranged into polypropylene containers. There are the pole outlets and the filling hole provided with special screwing valve plug located in the lid which prevent the spill of electrolyte during the cell is deflected from the vertical position. The electrodes are pocket one separated by PeCe filtration fabric in which is partially absorbed electrolyte. This construction arrangement together with the special valve plug permits temporary discharge of cells in argitrary position. It is necessary to perform the charge in vertical position.

Normal cell voltage	1.2 V
Cell capacity	10 Ah

The electrolyte is apropriate solution of potassium hydroxide (KOH) of density (1.2 ± 0.01) $g.cm^{-3}$ at the temperature of $20^{o}C$ with addition of 20 g lithium hydroxide $LiOH.H_2O$/litre. Electrolyte level must be between lines marked on the box.

PUT THE BATTERY INTO OPERATION (NEW ONE OR STORED ONE)

Take out the cells before charging and connect them by the same way as they were connected in the box (in series). Connect them again in the box after charging. Charge the airborne battery stored charged with electrolyte by several charging cycles before putting it into operation. Proceed as follows:

Cycle I: - carry out the balancing charging with current of 1.0 A for the time 20 hours. After that, discharge with current of 1.0 A up to voltage of 1.0 V/cell.

Cycle II: - carry out the normal charging with current of 1.0 A for the time 15 hours. After that, discharge with current of 1.0 A up to voltage of 1.0 V/cell.

Repeat the mode of the 2^{nd} cycle as required until rated capacity is reached. The necessary number of the cycles for reaching of the rated capacity is affected by the time of storage.
The temperature of the electrolyte must not exceed 40^{o} C during the charging. If the natural cooling with air is not enough, break the charging and continue after reduction of the electrolyte temperature. Extend the charging time by this break.

CHARGE OF THE BATTERY

Carry out the airborne battery charging after previous partial or full discharging.
Charging current is 1.0 A for the time of 15 hours.
Before charging:
Check the airborne battery voltage (min. 10 V, hand over the airborne battery to charging workshop if the voltage does not reach the value of 10 V).
Check also level and density of the electrolyte.

SUPPLEMENT No.5

PRESSURE CHECK AND FILLING OF SHOCK ABSORBER

CHECK OF SHOCK ABSORBER PRESSURE

Technological procedure :

- screw off the closing nut of the filling valve /8/ - see Fig.
- screw the closing nut of the filling equipment /9/ on the filling equipment and tighten it sufficiently
- screw the filling equipment on the filling valve /7/ of the landing gear shock absorber
- open slowly the valve of landing gear shock absorber with the handle /4/ of the filling equipment
- read the real pressure in the landing gear shock absorber on the manometer which must be 3.2 ± 0.1MPa (469 ± 14.2 psi)

NOTE : Increase or reduce the pressure to the prescribed value according to the technological procedure mentioned in this subsection in the case of necessity. It is possible to increase or reduce the pressure in the shock absorber of the landing gear installed on the sailplane (use the filling equipment Dwg. No. G080 280N).
In this case set the sailplane on the supports so that the shock absorber is unloaded .

- screw off the handle /4/ after the nitrogen pressure check, disconnect the filling equipment and verify if the filling valve perfectly closes the landing gear shock absorber
- screw the closing nut /8/ on the filling valve /7/.

FILLING OF THE SHOCK ABSORBER /see Fig./

When the cylinder is closed with the screws/1/, screw the filling valve /7/ with the sealing ring on the piston rod, tighten it tight and fill the shock absorber with pressure nitrogen. As the pressure nitrogen enters the piston rod, the floating piston is moved to the opposite side of the piston rod which forces the liquid from the piston rod into the cylinder.
The discharged liquid then slides the piston rod out of the cylinder. Filling with pressure nitrogen is to be carried out with the piston rod fully extended.

WARNING : WHEN FILLING THE SHOCK ABSORBER, TAKE CARE NOT TO MISTAKE OXYGEN FOR COMPRESSED NITROGEN. THIS MIGHT CAUSE AN EXPLOSION.

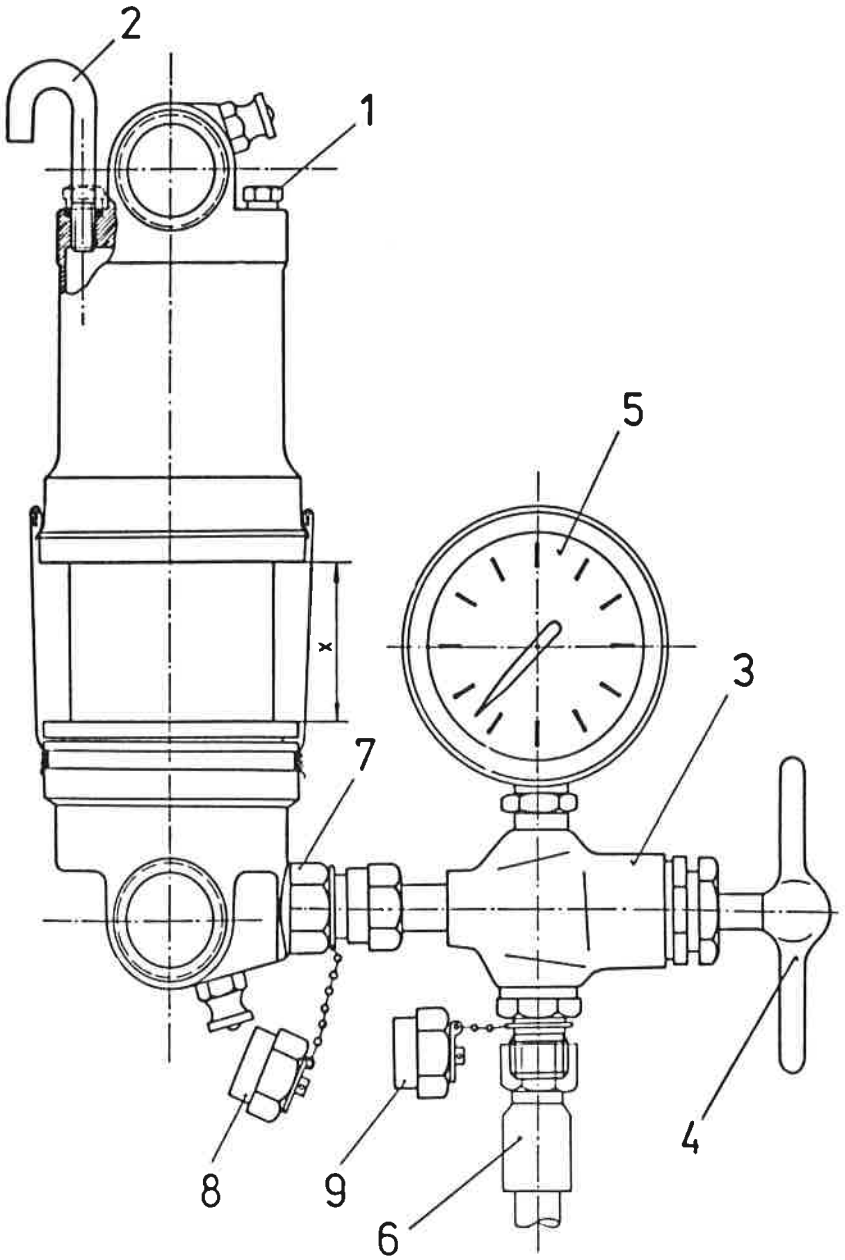
Use the filling equipment /3/ to fill the shock absorber with compressed nitrogen. Before the filling equipment is connected to the filling valve, screw off the handle /4/ to loose the needle of the filling equipment so that it does not bear against the cone of the filling valve.
Connect the filling equipment /3/ which is connected by the hose /6/ with the pressure bottle to the valve after removing the closing nut /8/ of the filling valve. Push the cone of the filling valve by screwing in the handle of the filling equipment which will open the passage for pressure nitrogen the pressure of which is shown on the manometer / 5/. Control slowly the supply of pressure nitrogen from the pressure bottle so that the manometer shows nitrogen pressure higher by app. 0.5 MPa (72.5 psi) than prescribed filling pressure of the shock absorber. Take care that the pressure on the manometer does not drop below the defined value.

(cont.)

SUPPLEMENT No.5

PRESSURE AND FILLING OF SHOCK ABSORBER CHECK

Then close the supply of nitrogen at the pressure bottle and close the shock absorber by screwing the handle /4/ off and disconnect the hose /6/ from the filling equipment. Screw the closing nut /9/ on its place, properly tight it and check the nitrogen pressure by opening slowly the valve of the shock absorber with the handle /4/. Read the real pressure in the shock absorber on the manometer. If the pressure is higher than prescribed, reduce it by loosening the closing nut /9/.
Screw the handle /4/ off after this check, disconnect the filling equipment, verify if the filling valve perfectly closes the shock absorber.
Then screw the closing nut /8/ on the filling valve.



Legend to Figure:
/1/ Closing screw, /2/ Auxiliary filling tube, /3/ Filling equipment, /4/ Handle of filling equipment, /5/ Manometer, /6/ Hose connected to pressure nitrogen, /7/ Filling valve, /8/ Closing nut of filling valve, /9/ Closing nut of filling equipment.

Supplement No.6

1,000 - HOUR INSPECTION OF L 33 SOLO SAILPLANE

CHECK AREAS:

Check for cracks, damage and corrosion.

A. AREA OF WING - FUSELAGE CONNECTION

Carry out the check in disconnected state.
Inspect attachments and bottom spar caps of the LH + RH wing up to area of section 3 through the holes in rib No.1.
Any cracks are not allowed in area of the wing spar and attachments.

B. EMPENNAGE

Carry out the check in disconnected state.
1. Inspect the front and rear spars and attachments on the fin through the holes in area of fin - stabilizer connection. Inspect stabilizer attachments in area of their fastening.
2. Inspect the fin front and rear spars through the bottom hole.
3. Inspect stiffener of the fuselage cone upper part in front of leading edge of the fin through the hole in bottom side of the fuselage cone.

Any cracks are not allowed in area of the spars and fin - stabilizer connection.

C. AREA OF LADING GEAR

Carry out the check after the fork and shock absorber disassembling.
Inspect the landing gear suspension and area of attachment in fuselage.

D. CENTER PART OF FUSELAGE

Carry out the check after removing bottom fuselage cover behind the landing gear bay.
Inspect construction in area of center section of a wing and rear cone connection.
Any cracks are not allowed.