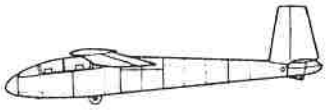
LETECKÉ ZÁVODY



MANDATORY BULLETIN

MB No: L 13 AC/012a

Concerning: Maintenance Manual L-13AC BLANIK Sailplane (Do-L13AC-1032.3)

Reason: Specified sailplane service life. Addition of the AMU1B.01 Acceleration monitoring unit.
Replace original pages 0-3, 0-8 to 0-16, 2-3, 2-4, 2-7 to 2-10, 3-14, 9-3 to 9-5, 9-14 to 9-26, 10-16 to 10-30 by new ones and insert new pages 0-17, 0-18, 9-27, 9-28, 10-31 to 10-38 with date Jan 30/03.

To be carried out at the latest by:	Immediately after receiving this bulletin.
To be carried out by:	Owner.
Costs to be covered by:	No cost arise.
Necessary material to be supplied by:	Revised pages are enclosed.
Bulletin becomes effective:	Since receiving this bulletin.
Manhours required:	-
Total number of pages:	1+33 enclosure pages.

Manufacturer

Engineering data contained in this Bulletin is CAA Approved.

Date:

RECORD OF ISSUED BULLETINS

Serial. No. of Bull.	No. of Bulletin L 13 AC/	Issue date	Numbers of pages to which bulletin applies	Date of insertion in this issue and signature
1	L 13 AC/004d	Feb 18/00	0-3, 0-9, 3-29	
2	L 13 AC/005d	Aug 15/01	0-3, 0-7, 0-9, 0-12, 0-16, 13-1 to 13-10	
3	L 13 /096a	Sep 10/01	0-3, 0-7, 0-9, 2-5	
4	L 13 /098a	Jan 25/02	0-3, 0-7, 0-9, 3-14	
5	L 13 AC/006d	Feb 11/02	0-3, 0-7 to 0-14, 1-4 to 1-8, 3-5, 3-7, 3-10, 3-13, 3-14, 3-15, 3-17, 3-18, 3-25, 3-30, 5-3 to 5-7, 5-15 to 5-22, 7-3, 7-4, 7-17, 8-5, 8-8	
6	L 13 AC/011a	June 6/02	0-3, 0-8, 0-9, 0-11, 0-12, 0-15, 9-3, 9-24 to 9-26	
7	L 13 AC/012a	Jan 30/03	0-3, 0-8 to 0-18, 2-3, 2-4, 2-7 to 2-10, 3-14, 9-3 to 9-5, 9-14 to 9-28, 10-16 to 10-38	

Serial. No. of Bull.	No. of Bulletin L 13 AC/	Issue date	Numbers of pages to which bulletin applies	Date of insertion in this issue and signature

RECORD OF REVISIONS

Serial. No. of revision	Number of bulletin L 13 AC...	Numbers of Pages			Date of Revision	Date of insertion in this issue and signature
		Rev. Pages	New. Pages	Del. Pages		
1	L 13 AC/004d	0-3	-	-	Feb 18/00	
		0-7	-	-		
		0-9	-	-		
		3-29	-	-		
2	L 13 AC/005d	0-3	-	-	Aug 15/01	
		0-7	-	-		
		0-9	-	-		
		0-12	-	-		
		0-16	-	-		
		-	13-1	-		
		-	to	-		
		-	13-10	-		
3	L 13 /096a	0-3	-	-	Sep 10/01	
		0-7	-	-		
		0-9	-	-		
		2-5	-	-		
4	L 13 /098a	0-3	-	-	Jan 25/02	
		0-7	-	-		
		0-9	-	-		
		3-14	-	-		
5	L 13 AC/006d	0-3	-	-	Feb 11/02	
		0-7	-	-		
		to	-	-		
		0-14	-	-		
		1-4	-	-		
		1-5	-	-		
		1-6	-	-		
		-	1-7	-		
		-	1-8	-		
		3-5	-	-		
		3-7	-	-		
		3-10	-	-		
		3-13	-	-		
		3-14	-	-		
		3-15	-	-		
		3-17	-	-		

Serial. No. of revision	Number of bulletin L 13 AC...	Numbers of Pages			Date of Revision	Date of insertion in this issue and signature
		Rev. Pages	New. Pages	Del. Pages		
5	L 13 AC/006d	3-18	-	-	Feb 11/02	
		3-25	-	-		
		3-30	-	-		
		5-3	-	-		
		to	-	-		
		5-7	-	-		
		5-15	-	-		
		to	-	-		
		5-20	-	-		
		-	5-21	-		
		-	5-22	-		
		7-3	-	-		
		7-4	-	-		
		7-17	-	-		
		8-5	-	-		
		8-8	-	-		
6	L13 AC / 011a	0-3	-	-	June 6/02	
		0-8	-	-		
		0-9	-	-		
		0-11	-	-		
		0-12	-	-		
		0-15	-	-		
		9-3	-	-		
		9-24	-	-		
		-	9-25	-		
		-	9-26	-		
7	L13 AC / 012a	0-3	-	-	Jan 30/03	
		0-8	-	-		
		to	-	-		
		0-16	-	-		
		-	0-17	-		
		-	0-18	-		
		2-3	-	-		
		2-4	-	-		
		2-7	-	-		
		to	-	-		
		2-10	-	-		
		3-14	-	-		

Serial. No. of revision	Number of bulletin L 13 AC...	Numbers of Pages			Date of Revision	Date of insertion in this issue and signature
		Rev. Pages	New. Pages	Del. Pages		
7	L13 AC / 012a	9-3	-	-	Jan 30/03	
		9-4	-	-		
		9-5	-	-		
		9-14	-	-		
		to	-	-		
		9-24	-	-		
		-	9-25	-		
		-	to	-		
		-	9-28	-		
		10-16	-	-		
		to	-	-		
		10-30	-	-		
		-	10-31	-		
		-	to	-		
		-	10-38	-		

Serial. No. of revision	Number of bulletin L 13 AC...	Numbers of Pages			Date of Revision	Date of insertion in this issue and signature
		Rev. Pages	New. Pages	Del. Pages		

LIST OF EFFECTIVE PAGES

Chapter	Page	Date
Tittle page	-	-
0 General	0 - 1	June 30/98
	0 - 2	June 30/98
Record of issued bulletins	0 - 3	Jan 30/03
	0 - 4	June 30/98
Record of temporary revisions	0 - 5	June 30/98
	0 - 6	June 30/98
Record of revisions	0 - 7	Feb 11/02
	0 - 8	Jan 30/03
	0 - 9	Jan 30/03
	0 - 10	Jan 30/03
List of effective pages	0 - 11	Jan 30/03
	0 - 12	Jan 30/03
	0 - 13	Jan 30/03
	0 - 14	Jan 30/03
Table of contents	0 - 15	Jan 30/03
	0 - 16	Jan 30/03
	0 - 17	Jan 30/03
	0 - 18	Jan 30/03
1 Introduction	1 - 1	June 30/98
	1 - 2	June 30/98
	1 - 3	June 30/98
	1 - 4	Feb 11/02
	1 - 5	Feb 11/02
	1 - 6	Feb 11/02
	1 - 7	Feb 11/02
	1 - 8	Feb 11/02
2 Inspections	2 - 1	June 30/98
	2 - 2	June 30/98
	2 - 3	Jan 30/03
	2 - 4	Jan 30/03
	2 - 5	Sep 10/01
	2 - 6	June 30/98
	2 - 7	Jan 30/03
	2 - 8	Jan 30/03
	2 - 9	Jan 30/03
	2 - 10	Jan 30/03
3 Servicing	3 - 1	June 30/98
	3 - 2	June 30/98
	3 - 3	June 30/98
	3 - 4	June 30/98
	3 - 5	Feb 11/02
	3 - 6	June 30/98

Chapter	Page	Date
3 Servicing	3 - 7	Feb 11/02
	3 - 8	June 30/98
	3 - 9	June 30/98
	3 - 10	Feb 11/02
	3 - 11	June 30/98
	3 - 12	June 30/98
	3 - 13	Feb 11/02
	3 - 14	Jan 30/03
	3 - 15	Feb 11/02
	3 - 16	June 30/98
	3 - 17	Feb 11/02
	3 - 18	Feb 11/02
	3 - 19	June 30/98
	3 - 20	June 30/98
	3 - 21	June 30/98
	3 - 22	June 30/98
	3 - 23	June 30/98
	3 - 24	June 30/98
	3 - 25	Feb 11/02
	3 - 26	June 30/98
	3 - 27	June 30/98
	3 - 28	June 30/98
	3 - 29	Feb 18/00
	3 - 30	Feb 11/02
	3 - 31	June 30/98
	3 - 32	June 30/98
4 Fuselage	4 - 1	June 30/98
	4 - 2	June 30/98
	4 - 3	June 30/98
	4 - 4	June 30/98
	4 - 5	June 30/98
	4 - 6	June 30/98
	4 - 7	June 30/98
	4 - 8	June 30/98
	4 - 9	June 30/98
	4 - 10	June 30/98
	4 - 11	June 30/98
	4 - 12	June 30/98
	4 - 13	June 30/98
	4 - 14	June 30/98
	4 - 15	June 30/98
	4 - 16	June 30/98
	4 - 17	June 30/98
	4 - 18	June 30/98
	4 - 19	June 30/98
	4 - 20	June 30/98
	4 - 21	June 30/98
	4 - 22	June 30/98
	4 - 23	June 30/98
	4 - 24	June 30/98
	4 - 25	June 30/98

Chapter	Page	Date
4 Fuselage	4 - 26	June 30/98
	4 - 27	June 30/98
	4 - 28	June 30/98
	4 - 29	June 30/98
	4 - 30	June 30/98
	4 - 31	June 30/98
	4 - 32	June 30/98
	4 - 33	June 30/98
	4 - 34	June 30/98
	4 - 35	June 30/98
	4 - 36	June 30/98
5 Wing	5 - 1	June 30/98
	5 - 2	June 30/98
	5 - 3	Feb 11/02
	5 - 4	Feb 11/02
	5 - 5	Feb 11/02
	5 - 6	Feb 11/02
	5 - 7	Feb 11/02
	5 - 8	June 30/98
	5 - 9	June 30/98
	5 - 10	June 30/98
	5 - 11	June 30/98
	5 - 12	June 30/98
	5 - 13	June 30/98
	5 - 14	June 30/98
	5 - 15	Feb 11/02
	5 - 16	Feb 11/02
	5 - 17	Feb 11/02
	5 - 18	Feb 11/02
	5 - 19	Feb 11/02
	5 - 20	Feb 11/02
	5 - 21	Feb 11/02
	5 - 22	Feb 11/02
6 Tail unit	6 - 1	June 30/98
	6 - 2	June 30/98
	6 - 3	June 30/98
	6 - 4	June 30/98
	6 - 5	June 30/98
	6 - 6	June 30/98
	6 - 7	June 30/98
	6 - 8	June 30/98
	6 - 9	June 30/98
	6 - 10	June 30/98
	6 - 11	June 30/98
	6 - 12	June 30/98
	6 - 13	June 30/98
	6 - 14	June 30/98
	6 - 15	June 30/98
	6 - 16	June 30/98
	6 - 17	June 30/98
	6 - 18	June 30/98

Chapter	Page	Date
7 Controls	7 - 1	June 30/98
	7 - 2	June 30/98
	7 - 3	Feb 11/02
	7 - 4	Feb 11/02
	7 - 5	June 30/98
	7 - 6	June 30/98
	7 - 7	June 30/98
	7 - 8	June 30/98
	7 - 9	June 30/98
	7 - 10	June 30/98
	7 - 11	June 30/98
	7 - 12	June 30/98
	7 - 13	June 30/98
	7 - 14	June 30/98
	7 - 15	June 30/98
	7 - 16	June 30/98
	7 - 17	Feb 11/02
	7 - 18	June 30/98
	7 - 19	June 30/98
	7 - 20	June 30/98
	7 - 21	June 30/98
	7 - 22	June 30/98
	7 - 23	June 30/98
	7 - 24	June 30/98
	7 - 25	June 30/98
	7 - 26	June 30/98
	7 - 27	June 30/98
	7 - 28	June 30/98
	7 - 29	June 30/98
	7 - 30	June 30/98
8 Landing gear	8 - 1	June 30/98
	8 - 2	June 30/98
	8 - 3	June 30/98
	8 - 4	June 30/98
	8 - 5	Feb 11/02
	8 - 6	June 30/98
	8 - 7	June 30/98
	8 - 8	Feb 11/02
	8 - 9	June 30/98
	8 - 10	June 30/98
	8 - 11	June 30/98
	8 - 12	June 30/98
	8 - 13	June 30/98
	8 - 14	June 30/98
	8 - 15	June 30/98
	8 - 16	June 30/98
	8 - 17	June 30/98
	8 - 18	June 30/98
	8 - 19	June 30/98
	8 - 20	June 30/98
	8 - 21	June 30/98
	8 - 22	June 30/98
	8 - 23	June 30/98
	8 - 24	June 30/98

Chapter	Page	Date
11 Repairs	11 - 36	June 30/98
12 Appendices	12 - 1	June 30/98
	12 - 2	June 30/98
	12.1 - 1	June 30/98
	12.1 - 2	June 30/98
	12.2 - 1	June 30/98
	12.2 - 2	June 30/98
	12.3 - 1	June 30/98
	12.3 - 2	June 30/98
	12.3 - 3	June 30/98
	12.3 - 4	June 30/98
	12.3 - 5	June 30/98
	12.3 - 6	June 30/98
	12.4 - 1	June 30/98
	12.4 - 2	June 30/98
	12.4 - 3	June 30/98
	12.4 - 4	June 30/98
	12.5 - 1	June 30/98
	12.5 - 2	June 30/98
13 Supplements	13 - 1	Aug 15/01
	13 - 2	Aug 15/01
	13 - 3	Aug 15/01
	13 - 4	Aug 15/01
	13 - 5	Aug 15/01
	13 - 6	Aug 15/01
	13 - 7	Aug 15/01
	13 - 8	Aug 15/01
	13 - 9	Aug 15/01
	13 - 10	Aug 15/01

Chapter	Page	Date

TABLE OF CONTENTS

2.1. INTERVALS OF INSPECTIONS

2.1.1. General

The system of periodical maintenance of the sailplane consists of operational and periodical maintenance in dependence on the number of flight hours.

2.1.2. Operational maintenance

This maintenance is carried out after ending of each flight day.

2.1.3. Periodical maintenance

The periodical maintenance includes maintenance during inspections No. 1,2,3,4 and annual inspection.

Inspection No. 1 - is carried out after every 100 + 5 hours (tolerance can be used only for the flight finalization or for the ferry flight to a place of inspection) or 500 ± 40 také-offs (including lubrication sailplane).

Inspection No. 2 - is carried out after every 500 ± 30 hours or 3000 ± 180 take-offs, however not later than after 5 years from the beginning of operation or from the last inspection No.2, 3, 4.

Inspection No. 3 - is carried out after every 1000 ± 50 hours or 5000 ± 250 take-offs, however not later than after 10 years from the beginning of operation or from the last inspection No. 3, 4.

Inspection No. 4 - is carried out after every 2000 ± 100 hours or 10000 ± 500 take-offs, however not later than after 15 years from the beginning of operation or from the last inspection No. 4.

- is carried out after a sailplane accident.

Annual inspection - is carried out once a year from the beginning of operation or since the last inspection. The date of the annual inspection is the beginning of the next 12-month inspection interval, as well as the beginning of the next inspection No.1 time limit.

2.1.4. Fuselage overhaul

The fuselage overhaul is not carried out.

2.1.5. Sailplane service life

The initial sailplane service life is determined to be 2000 flight hours and 8 000 take-offs on the assumption that the operational conditions are as follows:

- max. 4 take-offs per 1 flight hour
- the ratio of winch launches to the number of aerotow launches is 1:1
- crew: 70% double, 30% solo.
- aerobatic flight time is 10% of total flight time
- aerobatic flights with wing-tip extensions are prohibited
- current maneuvering load factors (g) do not exceed the following values:
  + 4.5 and - 2.0 when flying solo
  + 4.0 and - 2.0 when flying dual

NOTE: Carry out record of each aerobatic flight time. If value of 10% aerobatic flights (from initial service life of 2000 flight hours) is exceeded then contact the sailplane manufacturer for change of service life value. The aerobatic flight is a flight (solo or two-crew) during which any of the following aerobatic maneuvers (loop, stall turn, half loop and half roll, half roll and half loop, inverted flight, slow roll, flick roll, flick half roll and half loop, inverted spin) are performed within the flight stage from the release of the towing cable up to the minimum safe height. The aerobatic flight time is the total flight time i.e. the take-off – to landing time. The aerobatic flight time, winch and aerotow launches, crew (solo or dual), and installation of wing-tip extensions is to be entered in the Sailplane Operation Book Of Records.

2.1.6. Summary of time between overhauls and the service life of finished products

The following summary provides information to the sailplane user for observing the prescribed time between overhauls and the service life of finished products. If any product has not a certificate, or the TBO and for service life is not mentioned in the certificate, the datum mentioned in the following summary is valid.

Ser.	Name	Designation	TBO	Service Life
1	2	3	4	5
A	**COCKPIT INSTRUMENTS**			
(1)	Airspeed indicator	LUN 1106.14-8	-	on condition
(2)	Vertical speed indicator	LUN 1141.04	-	on condition
(3)	Vertical speed indicator	LUN 1147.23-8	-	on condition
(4)	Turn-and-bank indicator	LUN 1211.1	-	on condition
(5)	Altimeter	LUN 1124.01-8 or UI 5934P-3	- -	on condition on condition
(6)	Liquid type compass	LUN 1221.1-8	-	on condition
(7)	Accelerometer	AM 10	-	on condition
(8)	Acceleration Monitoring Unit (if installed)	AMU1B.01	-	10000 h.
	- battery (if installed)	LSH20 (SAFT)	-	4 years or 200 h.
(9)	Five points safety harness	GADRINGER		12 years
	- belly safety harness	Bagu 5202		
	- shoulder safety harness	Schugu 2700		
	- safety harness	Bogu 1400		
B	**LANDING GEAR**			
(1)	Wheel with brake	HP 4741-Z	-	on condition
(2)	Tyre with inner tube	350x135	-	on condition
(3)	Landing gear shock absorber	A 019 064 N	-	on condition
	a) Sealing collars of landing gear shock absorber	-	-	2000 ±100 h. or10000 ±500 take-offs/15 years
(4)	Tail wheel	A 751 201 N	-	on condition
C	**ELECTRICAL EQUIPMENT**			
(1)	Airborne battery (according to customer requirement)	NKDU 10 or NKDU 10R or NKDU 11	-	on condition
(2)	Switch	VG-15K-2S	-	on condition

2.2.3. Periodical maintenance

Point	Part name - prescribed operation	Periodical inspection				Note
		1	2	3	4	
-	**FUSELAGE**					
4.9.2.	Inspect the fuselage.	+	+	+	+	
4.9.4.	Inspect the skin of lower fuselage between 1st - 6th frame.		+	+	+	
4.9.5.	Inspect the frame No. 15 in the place of attachment of tail wheel unit.		+	+	+	
4.9.6.	Inspect the skins in the places of cutouts for various fittings.			+	+	
4.9.7.	Inspect the towing attachments.			+	+	
4.9.8.	Inspect the painting and the ornamentation of the sailplane.			+	+	
4.9.9.	Replace the cables sailplane to side towing attachments. (if their service lives have expired)				+	On sailplanes with side attachments.
4.9.10.	Replace the cable to lower attachment. (if their service lives have expired)				+	On sailplanes with lower attachment.
4.9.11.	Check the emergency releasing of canopy.	+	+	+	+	
-	**WING**					
5.4.2.	Inspect the wing.	+	+	+	+	
5.4.3.	Inspect the rivets on the ribs No. 13, 19, 25 on the upper side and on the lower side between the spar and the trailing edge.	+	+	+	+	
5.4.4.	Measure the holes and pins in the wing-fuselage attachments			+	+	
5.4.5.	Inspect the critical places of wing spar lower cap.	+	+	+	+	
5.4.6.	Inspect the stiffness of lower air brake.				+	
5.4.7.	Inspect the attaching pins of front and aft attachments of the wing.			+	+	
-	**TAIL UNIT**					
6.6.2.	Inspect the tail unit.	+	+	+	+	
6.6.3.	Measure the holes and the pins in the attachments of the tail unit.			+	+	
-	**CONTROLS**					
7.6.2.	Inspect the movability of control elements and neutral position of controls. Check plays between both halves of the elevator and check allowed plays of elevator trim tabs.	+	+	+	+	

Point	Part name - prescribed operation	Periodical inspection				Note
		1	2	3	4	
7.6.3.	Inspect the pull-rods, pulleys and of the controls guides.	+	+	+	+	
7.6.4.	Check the deflections of the control surfaces.	+	+	+	+	
7.6.5.	Check the aileron control system.		+	+	+	
7.6.6.	Check the tension of rudder control cables.	+	+	+	+	
7.6.7.	Check the control of the elevator and control of elevator trim tabs.		+	+	+	
7.6.8.	Check the tension of the elevator and the elevator trim tab control cables.		+	+	+	
7.6.9.	Inspect the air brakes control.			+	+	
7.7.2.	Carry out replacement of the rudder control cables. (if their service lives have expired)			+	+	
-	**LANDING GEAR**					
8.7.3.	Check the tolerance in the landing gear attachment.	+	+	+	+	
8.7.4.	Inspect the landing gear.			+	+	
8.7.5.	Inspect tail wheel unit and wingtip wheels.	+	+	+	+	
8.7.6.	Inspect the tyre wearing.	+	+	+	+	
8.7.7.	Inspect the wheel with brake.	+	+	+	+	
8.7.8.	Inspect the condition of wheel bearing.				+	
8.7.9.	Check of shock absorber pressure	+	+	+	+	
8.7.11.	Check the operation of landing gear control mechanism.	+	+	+	+	
8.8.1.	Carry out replacement of the sealing collar of landing gear shock absorber.				+	
-	**EQUIPMENT AND FURNISHING**					
9.13.3.	Inspect the cockpits.	+	+	+	+	
9.13.5.	Inspect the contents and the condition of first aid kit.	+	+	+	+	
9.13.6.	Blow through the tubing of total, static and compensated pressure.		+	+	+	
9.13.7.	Inspect the instruments of the systems of total, static and compensated pressure.	+	+	+	+	
9.13.10.	Carry out the treatment of the airborne battery.	+	+	+	+	
9.13.11.	Inspect the wire bundles.			+	+	
9.13.12.	Inspect the electric system.				+	
9.13.13.	Check all conductive bonds of the control system.	+	+	+	+	
9.14.2.	Carry out the replacement of the hoses of total, static and compensated pressure.				+	
9.15.1.	Check for leakage of the systems of total, static and compensated pressure.			+	+	
9.15.2.	Check for integrity of lead seal on the AMU1B.01 acceleration monitoring unit (if installed)	+	+	+	+	

Point	Part name - prescribed operation	Periodical inspection				Note
		1	2	3	4	
-	**INSTRUMENTS AND PARTS OF ELECTRICAL EQUIPMENT**					
10.12.2.	Clean the collector of LUN 1211.1 turn-and-bank indicator		+	+	+	
10.12.3.	Carry out the compensation of LUN 1221.1-8 liquid type compass		+	+	+	
10.12.5.	Process the data from the AMU1B.01 acceleration monitoring unit (if installed)	+	+	+	+	
10.13.1.	Remove LUN 1106.14-8 airspeed indicator and hand it over to test room. Carry out the reinstallation after testing in the test room.				+	
10.13.2.	Remove LUN 1124.01-8 altimeter and hand it over to test room. Carry out the reinstallation after testing in the test room.				+	
10.13.2a.	Remove UI 5934P-3 altimeter and carry out maintenance according to the altimeter manufacturer instruction. Carry out reinstallation of the altimeter after maintenance and check.				+	
10.13.3.	Remove LUN 1147.23-8 vertical speed indicator and hand it over to test room. Carry out the reinstallation after testing in the test room.				+	
10.13.4.	Remove LUN 1141.04 vertical speed indicator and hand it over to test room. Carry out the reinstallation after testing in the test room.				+	
10.13.5.	Remove LUN 1211.1 turn-and-bank indicator and carry out inspection. After the inspection carry out reinstallation.		+	+	+	
10.13.6.	Remove LUN 1221.1-8 liquid compass and hand it over to test room. Carry out the reinstallation after testing in the test room.				+	
10.13.7.	Remove AM-10 accelorometer and hand it over to test room. Carry out the reinstallation after testing it the test room		+	+	+	
10.15.1.	Check LUN 1106.14-8 airspeed indicator in test room.				+	
10.15.2.	Check LUN 1124.01-8 altimeter in test room.				+	
10.15.2a.	Check UI 5934P-3 altimeter according to direction of the UI 5934P-3 altimeter manufacturer.				+	
10.15.3.	Check LUN 1147.23-8 vertical speed indicator in test room.				+	
10.15.4.	Check LUN 1141.04 vertical speed indicator in test room.				+	
10.15.5.	Check LUN 1211.1 turn-and-bank indicator for demage.				+	
10.15.6.	Check LUN 1221.1-8 liquid compass in test room.				+	
10.15.7.	Check AM-10 accelerometer in test room.		+	+	+	

Point	Part name - prescribed operation	Periodical inspection				Note
		1	2	3	4	
-	**REPAIRS**					
11.4.2.	Check corrosion extent of electron light metal parts remove found corrosion.			+	+	

NOTE: Sailplane lubrication including lubricating plan which contains list of lubricating places is mentioned in chapter **3 Servicing**, paragraph 3.8.2.

The annual inspection includes the operation procedures for periodical inspection No.1, plus the following:

8.7.4.	Inspection of landing gear
8.7.8.	Verification of condition of wheel bearing
9.13.6.	Blowing-through of total, static and compensated pressure lines
9.13.11.	Inspection of wire bundles
10.12.3.	LUN 1211.1-8 liquid type compass compensation

The following operation is to be performed after 4 years, however not later than after 200 flight hours:

10.13.8.	Replacement of the AMU1B.01 acceleration monitoring unit battery (if the AMU1B.01 is installed).

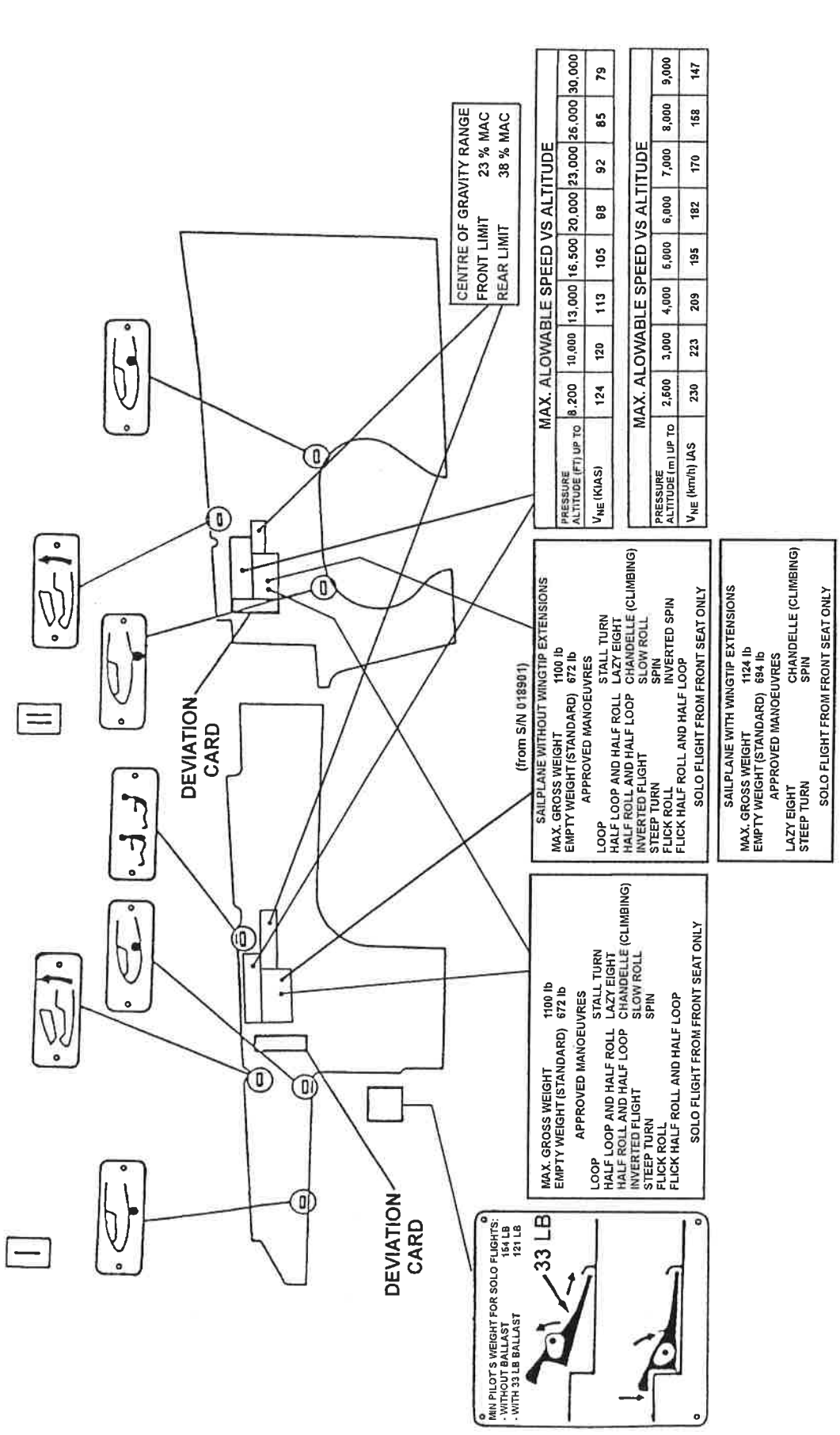


FIG. 3.7-3 INSIDE PLACARDS AND MARKINGS - RIGHT SIDE OF FRONT AND AFT COCKPITS

I - front cockpit

II - aft cockpit

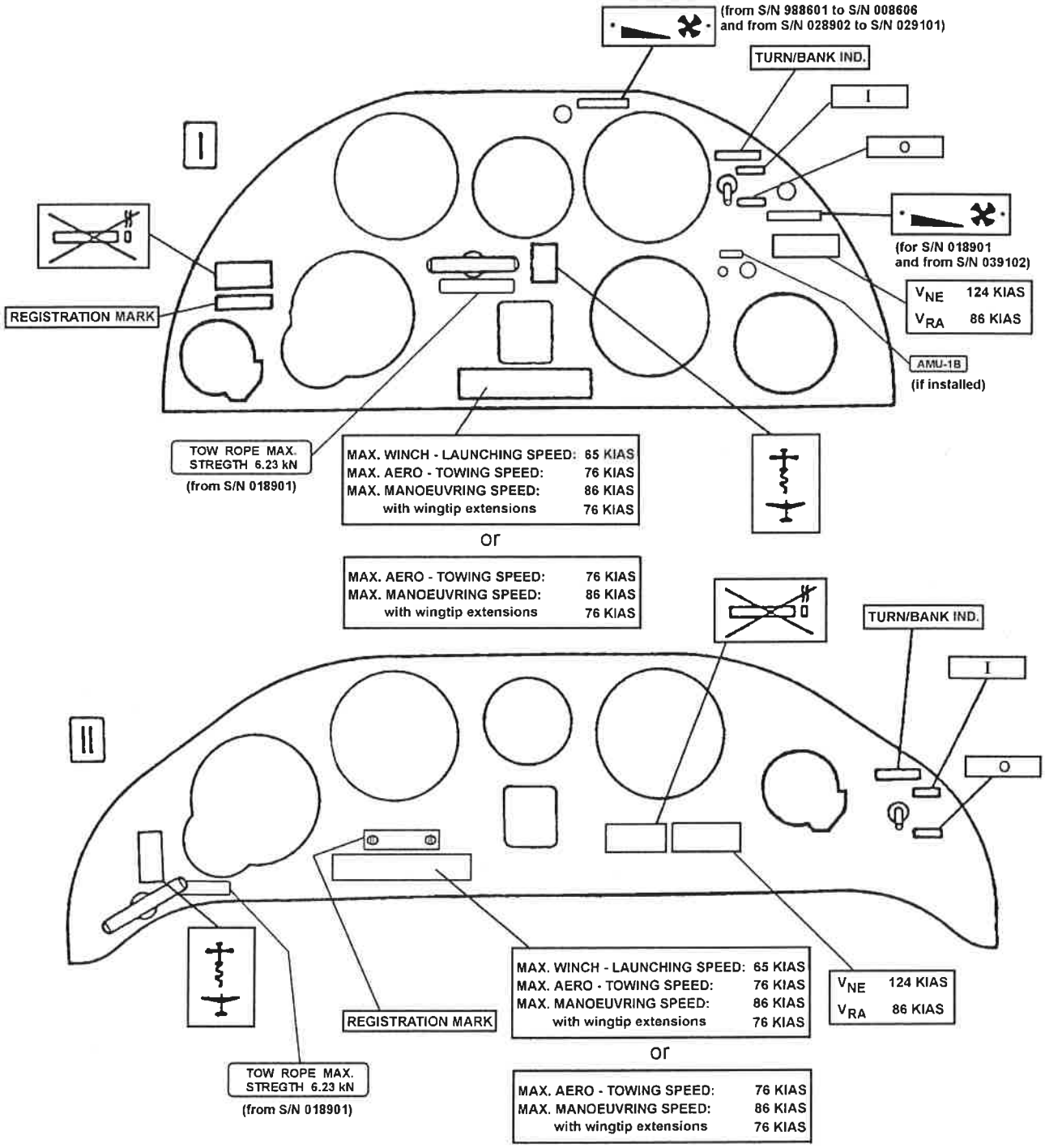


FIG. 3.7-4 INSIDE PLACARDS AND MARKINGS - FRONT AND AFT INSTRUMENT PANELS

I - front instrument panel

II - aft instrument panel

9.1. EQUIPMENT AND FURNISHINGS

Equipment / furnishing list - see section 9.17.

The instrumentation includes the instruments and the control elements which serve to the flight crew for the control of the sailplane and for the evaluation of the flight mode.

The flight instruments provide the flight crew with the data of the sailplane attitude and the flight direction.

The flight instrument system consists of the instruments utilizing the changes of the pressure in dependence of the altitude and airspeed, and of the instruments utilizing the earth magnetic field.

The turn-and-bank indicator and the liquid compass belong to the system of instruments which give the data about the attitude and the direction of flight.

The accelerometer is installed to provide information on the overloads acting on the sailplane in the direction normal to the wing area.

AMU1B.01 Acceleration monitoring unit (if installed) is used to monitor flight parameters and it is source for the safe life calculation of the sailplane.

It is possible to install the NiCd battery and VHF transceiver into the special equipment on request of the customer.

9.2. INSTRUMENT PANELS AND CONTROL PANELS

9.2.1. General

The instruments and the control elements necessary for the sailplane control are situated on the instrument panels and the control panels in the cockpit.

9.2.2. Front instrument panel

The front instrument panel is situated between the frames No.1 and 2 and it is attached in three points to the instrument panel glareshield. The instrument panel glareshield is screwed on the oblique frame No.1f. The spring mounting of the instrument panel is carried out with the rubber shock absorbers at the locations of the attachment bolts.

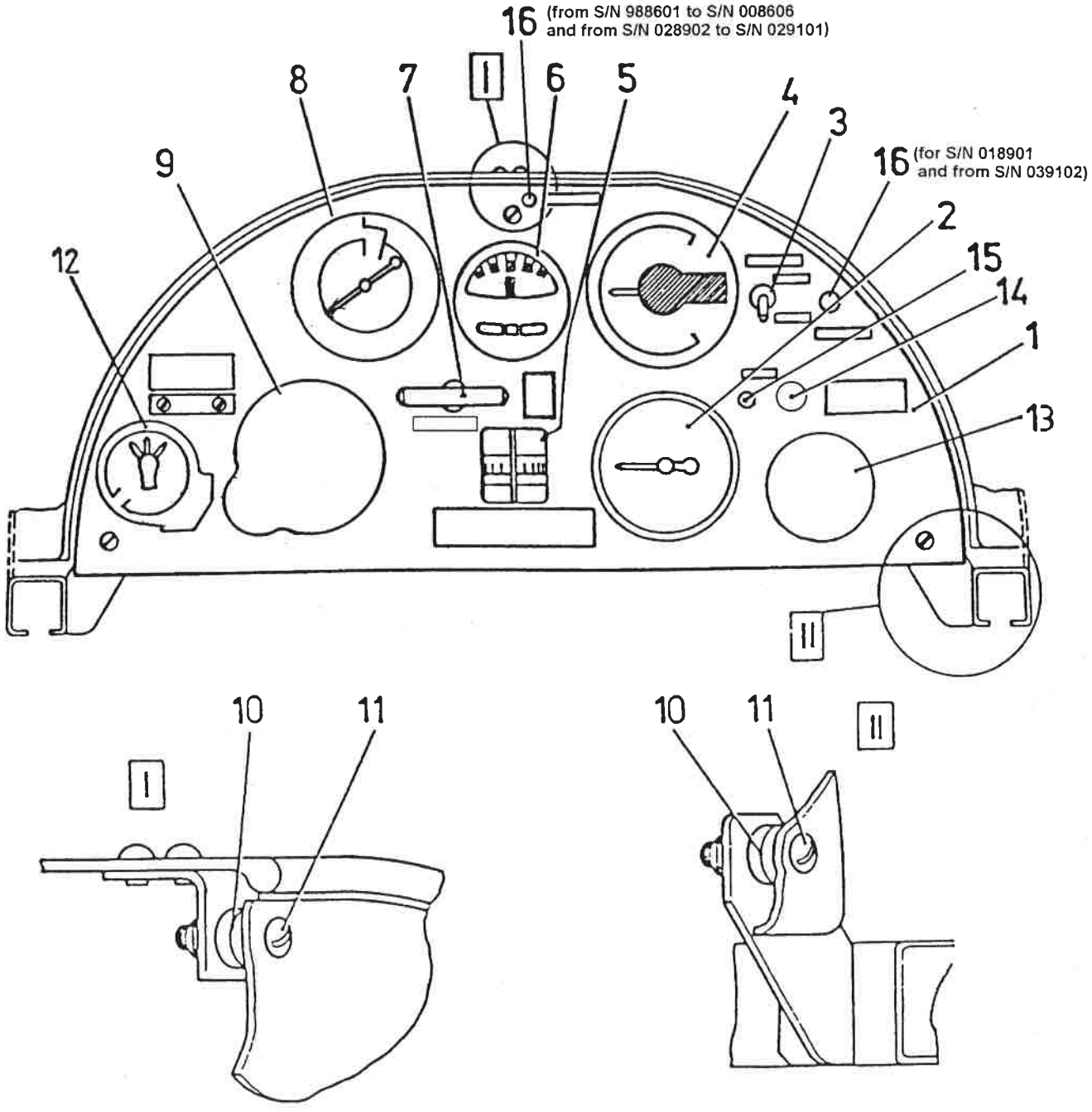


FIG. 9.2-1 FRONT INSTRUMENT PANEL

Legend to Figure - see following page.

Legend to Fig. 9.2-1:

Pos.	Name	Type	Qty	Note
1	Instrument panel	-	1	
2	Vertical speed indicator	LUN 1147.23-8	1	
3	TURN-AND-BANK INDICATOR switch	VG-15K-2S	1	
4	Vertical speed indicator	LUN 1141.04	1	
5	Liquid type compass	LUN 1221.1-8	1	
6	Turn-and-bank indicator	LUN 1211.1	1	
7	Towing cable release control handle	-	1	
8	Airspeed indicator	LUN 1106.14-8	1	
9	Altimeter	LUN 1124.01-8 or UI 5934P-3	1 1	
10	Rubber shock absorber	-	3	
11	Bolt	-	3	
12	Accelerometer	AM 10	1	
13	Transceiver (on customer's request)	LS 5 or BECKER AR 4201 or TERRA TX 760 D	1 1 1	
14	TEST pushbutton	KNR	1	(if installed)
15	LED diode	727644-61	1	(if installed)
16	Cockpit ventilation control handle	-	1	

NOTE: Airspeed indicator markings - see chapter 10, point 10.1.4., page 10 - 4.

9.2.3. Rear instrument panel

The rear instrument panel is situated on the frame No.3 and it is attached in four points to the instrument panel glareshield. The instrument panel glareshield is screwed to the frame on the frame No.3 and to the brace. The spring mounting is carried out with the rubber shock absorbers at the locations of the attachment bolts.

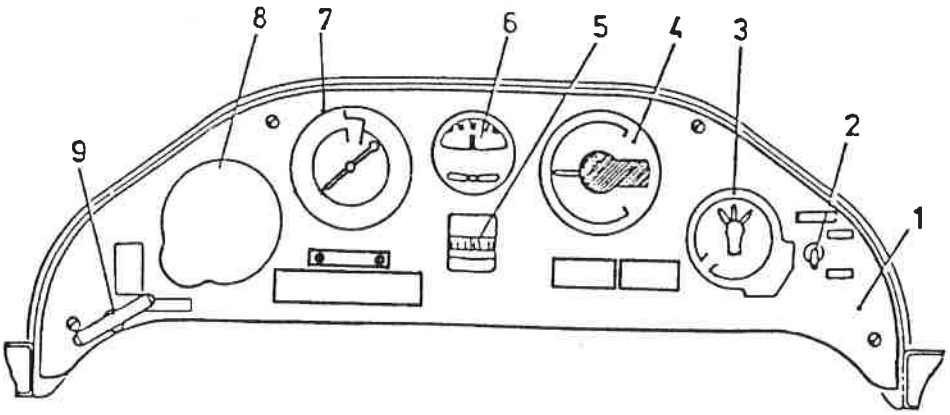


FIG. 9.2-2 REAR INSTRUMENT PANEL

Legend to picture - see following page.

Legend to Fig. 9.2-2:

Pos.	Name	Type	Qty t	Note
1	Instrument panel	-	1	
2	TURN-AND-BANK INDICATOR switch	VG-15K-2S	1	
3	Accelerometer	AM 10	1	
4	Vertical speed indicator	LUN 1141.04	1	
5	Liquid type compass	LUN 1221.1-8	1	
6	Turn-and-bank indicator	LUN 1211.1	1	
7	Airspeed indicator	LUN 1106.14-8	1	
8	Altimeter	LUN 1124.01-8 or UI 5934P-3	1 1	
9	Towing cable release control handle	-	1	

NOTE: Airspeed indicator markings - see chapter 10, point 10.1.4., page 10 - 4

9.2.4. Control panels

The control panels are situated on both the left and right sides of both cockpits. The control elements for the sailplane control and the control of retraction and extension of the landing gear are situated on the control panels.

9.3. COCKPIT VENTILATION

Sufficient ventilation of the cockpit of the sailplane is provide by the ventilation system. The cold air from the atmosphere is led into the ventilation system partly:

- through the elbow (1) of the air intake (situated in the front part of the fuselage). The ventilation air is led by the hose (2) into the distributing piece (3) (see Fig. 9.3-1) equipped with the regulation flap (4) for the control of the intake of the amount of the cold air into the channel by which the air is led to the slots in the front cover of the instrument panel and partly:
- through the flap situated in the front part of the cockpit canopy.

The regulation flap in the distribution piece and the flap (9) in the front part of the cockpit canopy are controlled by the string (6) jointed to the pull-rod (11) with the handle (12) situated in the guide (13) on the front instrument panel, slightly to the right of longitudinal axis.

When pushing the pull-rod forward (in the flight direction), the flap in the distribution piece is opened, the bevel wall of the pull-rod lifts the finger (8) which will bear with its face on the attached spring (10) and thus lift the flap (9) (see Fig. 9.3-1).

Proceed in the opposite way to close the flap (9) and the regulation flap in the distribution piece (shift the pull-rod against the flight direction).

9.7. LUN 1211.1 TURN-AND-BANK INDICATOR INSTALLATION

LUN 1211.1 turn-and-bank indicators are built in the front and rear instrument panels.

NOTE: The operating voltage of the turn-and-bank indicators through the voltage regulator tube is 12/4.5 VDC (on the sailplanes with installed airborne battery of 12 V).
The operating voltage of the turn-and-bank indicators is 4.5 VDC
(on the sailplanes with installed airborne battery of 4.5 V).

The turn-and-bank indicators are activated by switching on of switches TURN-AND-BANK INDICATOR positioned on the front and rear instrument panels.

NOTE: The installation of the turn-and-bank indicators is carried out by the customer according to his own power supply. The manufacturer carries out the installation of the turn-and-bank indicators on the requirement of the customer.

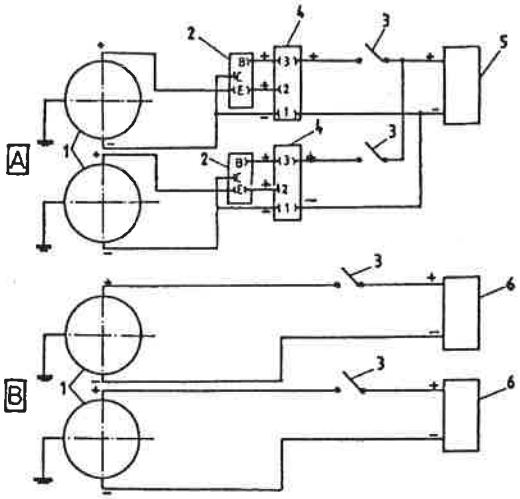


FIG. 9.7-1 WIRING DIAGRAM OF LUN 1211.1 TURN-AND-BANK INDICATOR

A - on the sailplanes with the connection through the voltage regulator of 12/4.5 VDC and to the airborne battery of 12 V

B - on the sailplanes with the connection to the battery of 4.5 VDC

(1) LUN 1211.1 Turn-and-bank-indicator, (2) Voltage regulator of 12/4.5 VDC,
(3) VG-15K-2S switch, (4) 74 K terminal block, (5) Airborne battery - on customer`s request,
(6) Battery of 4.5 VDC.

9.8. LUN 1221.1-8 LIQUID COMPASS INSTALLATION

The crew of the sailplane carries out the determination of the flight course, its checking and holding of the flight course by means of the liquid compass. The compass is used without any modifications in the latitudes zone with the vertical intensity of the magnetic earth field from -3.98 to ± 39.79 A/m. The liquid compasses are installed on the front and rear instrument panel.

9.9. AM-10 ACCELEROMETER INSTALLATION

The crew of the sailplane finds out the overloading acting on the sailplane in the direction normal to the wing area by means of the accelerometer.

The accelerometers are installed on the front and rear instrument panel.

Technical data:

Operating range from - 5 kg to + 10 g.

9.9A. AMU1B.01 ACCELERATION MONITORING UNIT INSTALLATION (if installed)

AMU1B.01 Acceleration monitoring unit (together with the data from the sailplane operation book of records) is source for the calculation of the sailplane safe life. See point 10.10. for more information.

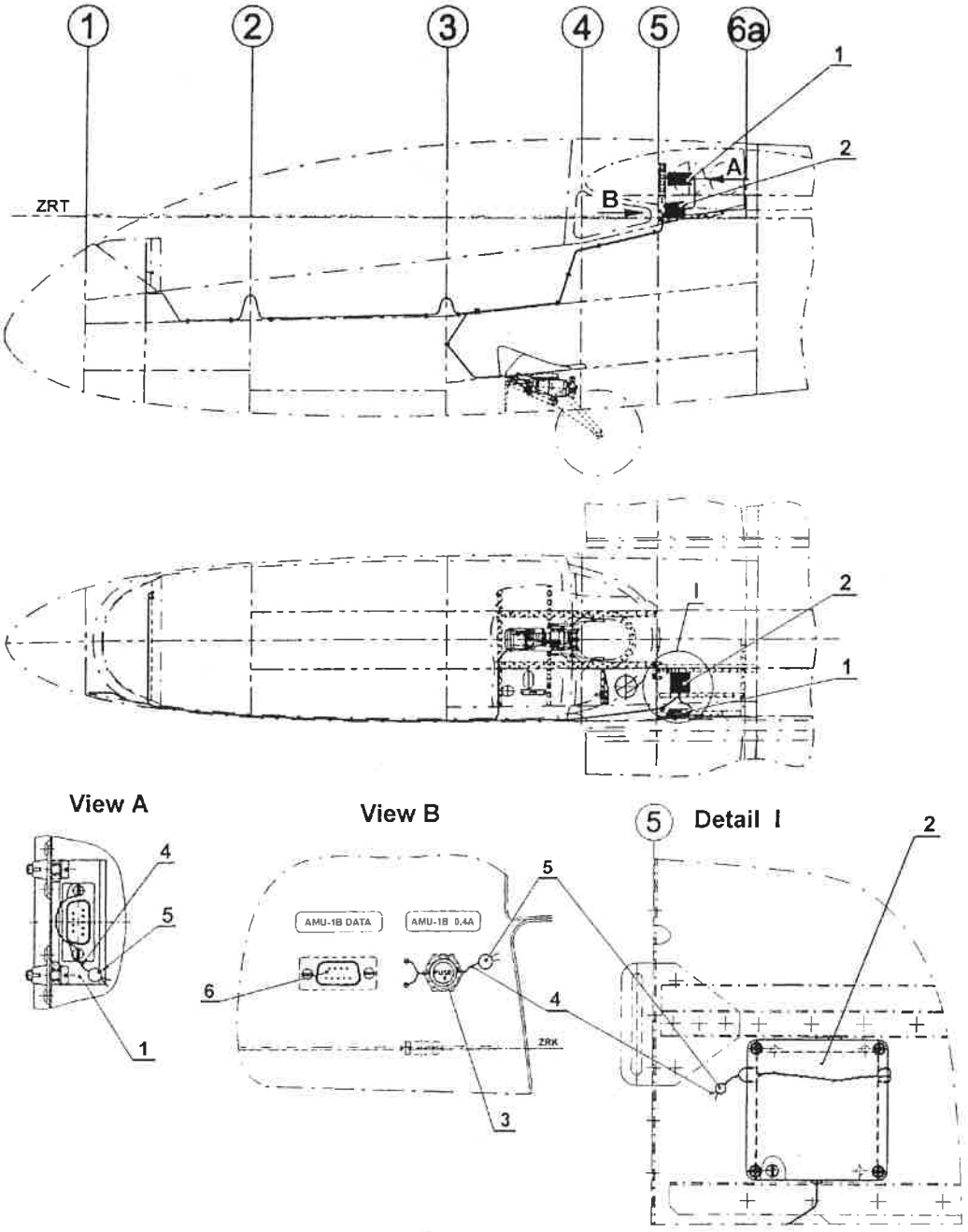


FIG. 9.9A-1 AMU1B.01 ACCELERATION MONITORING UNIT INSTALLATION (if installed)

(1) AMU1B.01 acceleration monitoring unit; (2) Battery box (A 580 086 N); (3) AMU1B.01 Fuse, (4) Seal wire, (5) 87194008 Seal, (6) Connector for PC cable

9.10. NiCd BATTERY INSTALLATION

The NiCd battery is the electric power supply of the sailplane by which the electrical surfaces of the sailplane are supplied. The NiCd battery is installed and delivered on the customers´s request.

9.11. VHF TRANSCEIVER INSTALLATION

The radiocommunication equipment consists of:

- one LS-5 VHF transceiver or one Becker AR 3201 VHF or one TERRA TX 760 D VHF transceiver for radio connection of sailplane crew with the air traffic control service not for the mutual communication of the crew.

These transceivers are installed and delivered on the customer's request.

9.12. ELECTRICAL BONDING AND GROUNDING

9.12.1. Purpose

The normal operation of the radiocommunication equipment and other equipment is endangered by disturbances resulting from accumulation of static electricity. Conductive bonding of particular parts of the sailplane among them between various parts of the sailplane, and between the components and the sailplane structure is carried out to minimize the effect of the disturbances .

The conductive bonding can be achieved:

- by the direct bonding
- by means of bonding strips. This method of conductive bonding is selected where the connected parts have the relative motion or if it is not possible to use the direct bonding for the structural reasons.

Consider during the maintenance that the most of the parts are surface treated:

- steel parts with cadmium plating
- light metal alloys with anodizing

The surface treatments with metal coatings are electrically conductive. Proper conductive bonding is reached by fixed connection (by bolts, rivets) of the parts with such coatings. The surface treatments using anodizing, phosphating, varnishing and so on are electrically nonconductive. The contact areas serving to the conductive bonding must be properly cleaned to the metallic gloss and degreased. The joint must be treated with the C 2001/8140 varnish after performed jointing.

9.12.2. Technical data

The contact resistance of correctly carried out electrical bonding must be 2000 microohms as a maximum. The measurement is carried out with the microohmmeter between two points which include both contact areas of the bonding strip. For the moving parts of the sailplane (pull-rods), the contact resistance must not change during the motion of the connected parts.

The contact resistance on the sailplane is measured on all bonding strips of the parts listed in the table below.

Ser. No.	Assembly name		Parts interconnected with bonding strips	
1	Aileron controls in fuselage	A 740 270 N	Fitting A 741 215 N	Control column fork A 741 225 L/R
2			Control column fork A 741 225 L/R	Pull-rod A 741 220 N
3			Pull-rod A 741 220 N	Control column fork A 741 225 L/R
4			Control column fork A 741 225 L/R	Bellcrank A 741 268 N
5			Bellcrank A 741 268 N	Pull-rod A 741 274 N
6			Pull-rod A 741 274 N	Countershaft (bottom) A 741 248 N
7			Countershaft (bottom) A 741 248 N	Bracket (on frame No.6) A 711 286 N
8			Countershaft (upper part)	Pull-rods (L+R side) A 741 294 N
9	Elevator controls	A 410 090 N	Bracket (floor between frames 3-5) A 711 253 N	Double-arm lever A 741 264 N
10			Double-arm lever A 741 264 N	Control cables A 401 085 N lower A 401 084 N upper
11			Control cables A 401 085 N lower A 401 084 N upper	A 401 042 N
12			Double-arm lever A 401 042 N	Pull-rod A 401 076 N
13			Pull-rod A 401 076 N	Elevator drive A 401 030 N
14	Rudder controls	A 540 200 N	Double-arm lever A 741 303 N	Pull-rods (L+R) A 741 308 N
15			Pull-rods (L+R) A 741 308 N	Cable A 402 092 N
16			Pull-rods (L+R) A 741 308 N	Lever A 741 305 N
17			Lever A 741 305 N	Floor between frames 1-3 A 710 320 N
18	Air brake control	A 740 400 N	Pull-rod A 740 445 N	Pull-rod (central) A 740 448 N
19			Pull-rod (central) A 740 445 N	Pull-rod (rear) A 740 455 N
20			Pull-rod (rear) A 740 455 N	Air brake pull-rod A 740 407 N
21			Air brake pull-rod A 740 407 N	Lever on A 741 411 N / Countershaft A 740 444 N

Ser. No.	Assembly name		Parts interconnected with bonding strips	
22	Ailerons controls in right wing - valid also for left wing	A 740 350 R L	Bracket on rib No.1	Lever A 741 460 N
23			Lever A 741 460 N	Pull-rod A 741 463 N
24			Pull-rod A 741 463 N	Lever A 741 462 N
25			Lever A 741 462 N	Pull-rod A 741 463 N
26			Pull-rod A 741 463 N	Lever A 741 462 N
27			Lever A 741 462 M	Pull-rod A 741 466 N
28			Pull-rod A 741 466 N	Lever A 741 461 R L
29			Lever A 741 461 R L	Pull-rod A 741 464 N
30			Pull-rod A 741 464 N	Aileron
31			Bellcrank A 741 461 R L	Bracket on rear part of the rib No.19

9.13. SERVICING

9.13.1. Inspection of attachment of instrument panels and inspection of instruments. Inspection of five-point safety harnesses.

A. Aids, testing and additional equipment — not required

B. Material — not required

C. Tooling — not required

D. Referenced information — 2.2.2. operational maintenance

E. Technological procedure

Inspect the attachment of the instrument panels. Remove the fault if the attachment is defective, replace the faulty shock absorbers.

Inspect visually, if the instruments are not damaged (broken or cracked glass, fallen pointer, or the outer appearance of the instrument parts otherwise damaged and so on).

Remove the fault, if any, and/or replace the instrument by new one. Before each flight inspect visually the five-point safety harnesses and check for their proper function. Check that the harnesses are not dirty or damaged, and that their locking devices and metallic parts function properly. If any damage or fouling of the harness straps, or malfunction is found, remove the harnesses from the sailplane. Wash the dirt with water and fine soap and clean the metallic parts with

technical petrol or spirit. Take care that no dirt or moisture gets into the locking device. If necessary, replace them by new ones, or send the harnesses including the certificates to an aviation repair shop for repair.

9.13.2. Inspection of cockpit ventilation system

A.	Aids, testing and additional equipment	not required
B.	Material	not required
C.	Tooling	not required
D.	Referenced information	2.2.2. operational maintenance

E. Technological procedure

(1) Inspect the air inlet of the elbow of air intake.
Not allowed: impurity, foreign objects in the hole.

(2) Check the operation of the regulation flap. The regulation flap must take the correct position.

(3) Check the operation of the flap in the glass of the canopy. The flap must open and close smoothly.

9.13.3. Cockpit inspection

A.	Aids, testing and additional equipment	not required
B.	Material	cleaning agents
C.	Tooling	not required
D.	Referenced information	2.2.3. periodical maintenance (inspection 1,2,3,4)

E. Technological procedure

Clean the cushions and upholstery, repair or replace the faulty places. Inspect and check the five points safety harnesses in the cockpits. Check for the following:

- damaged edges, wear, weathering, mouldy and rusty spots, torn seams
- distortion, cracks and fractures, corrosion, incorrect operation of metallic parts and attachments
- damaged, incomplete, or missing markings
- expiration of the period of operation
- overstress (safety harnesses used after an accident)

CAUTION: IF THE ABOVE FAULTS ARE FOUND, REMOVE THE SAFETY HARNESSES FROM THE SAILPLANE AND REPLACE THEM BY NEW ONES. SEDN THE ORIGINAL HANESSES, INCLUDING THE CERTIFICATES, TO AN AVIATION REPAIR SHOP FOR REPAIR

Inspect the locking of the pins of front and rear back-rests and tightening of the bolt attaching the arresting strap of the front seat back-rest. Inspect the condition of the strap. Replace the strap if damaged.

9.13.4. Inspection of first-aid kit attachment

A.	Aids, testing and additional equipment	not required
B.	Material	not required
C.	Tooling	not required
D.	Referenced information	2.2.2. operational maintenance

E. Technological procedure

Inspect the correct attachment of the first-aid kit. Remove the found out faults.

9.13.5. Inspection of contents and condition of first-aid kit

A.	Aids, testing and additional equipment	not required
B.	Material	not required (if necessary fill the first aid kit with missing items)
C.	Tooling	not required
D.	Referenced information	2.2.3. periodical maintenance (inspection 1,2,3,4)

E. Technological procedure

Inspect and check the condition of the first aid kit. Fill in the missing medical material and replace faulty items.

First aid-kit contents:

Dressing No. 2	1 pc
Dressing No. 3	1 pc
Triangular bandage	1 pc
Hydrophilic gauze 20/2 m	1 pc
Spofaplast adhesive bandage 8x4 cm	2 pcs
Mask	1 pc

9.13.6. Blowing-through of total, static and compensated pressure lines

A.	Aids, testing and additional equipment	pressure air source
B.	Material	binding wire in dia of 0.031 in (0.8 mm) to 0.040 in (1 mm)

C.	Tooling	pliers
D.	Referenced information	2.2.3. periodical maintenance (inspection 2,3,4)

E. Technological procedure

Disconnect the hoses of the total, static and compensated pressure from the instruments and blow through with air. After blowing-off connect the hoses to the instruments and wirelock.

9.13.7. Inspection of instruments of total, static and compensated pressure system

A.	Aids, testing and additional equipment	not required
B.	Material	not required
C.	Tooling	not required
D.	Referenced information	2.2.3. periodical maintenance (inspection 1,2,3,4)

E. Technological procedure

Inspect and check the attachment and condition of the instruments and connection of the total, static and compensated pressure hoses to the instruments on the front and rear instrument panels. Remove and correct the found out faults.

9.13.8. Inspection of battery bay

A.	Aids, testing and additional equipment	not required
B.	Material	soda solution, rag
C.	Tooling	not required
D.	Referenced information	2.2.2. operational maintenance

E. Technological procedure

Inspect the battery bay if it is not dirty. Wash the dirty parts with the soda solution and dry.

9.13.9. Airborne battery charging

A.	Aids, testing and additional equipment	power supply, voltmeter
B.	Material	not required
C.	Tooling	not required
D.	Referenced information	2.2.2. operational maintenance

E. Technological procedure

Inspect the voltage of the airborne battery (min. 10 V, if it does not reach to this value, hand over the battery at the charging station for charging. The procedore of the airborne battery charging is mentioned in chapter 10.

9.13.10. Maintenance of airborne battery

A.	Aids, testing and additional equipment	densimeter, voltmeter
B.	Material	not required
C.	Tooling	not required
D.	Referenced information	2.2.3 periodical maintenance (inspection 1,2,3,4)

E. Technological procedure

Carry out the maintenance of the airborne battery and inspect the level of the electrolyte in the individual cells of the battery (it must be between the marks on the battery vessel). Further inspect the density of the electrolyte and the voltage of the individual cells of the battery.

9.13.11. Inspection of wire bundles

A.	Aids, testing and additional equipment	not required
B.	Material	not required
C.	Tooling	not required
D.	Referenced information	2.2.3. periodical maintenance (inspection 3,4)

E. Technological procedure

Inspect the wire bundles or the wires in the places where they pass through the frames, if they are protected with the rubber bushings or with the leatherette, and add or replace the bushing and repair or replace the leatherette, if required.

9.13.12. Wiring inspection

A.	Aids, testing and additional equipment	not required
B.	Material	not required
C.	Tooling	not required
D.	Referenced information	2.2.3. periodical maintenance (inspection 4)

E. Technological procedure

Inspect and check the clamping of the wiring. Inspect and check the ends of the wires and cable sockets and their wearing.

Inspect and check the socket-plug joints for corrosion and damage, Inspect and check the shielding of the shielded bundles, repair the damage places.

Inspect and check the condition of cable insulation. Replace the faulty wires. Observe the numeral marking of the wires.

9.13.13. Check of electrical bonding of control system

A.	Aids, testing and additional equipment	not required
B.	Material	not required
C.	Tooling	screwdriver 6x20
D.	Referenced information	2.2.3. periodical maintenance (inspection 1,2,3,4)

E. Technological procedure

Remove the nose cone (see Fig. 3.4-1, 3.4-2, pos. 7 in chapter 3), covers (see Fig. 3.4-1, 3.4-2, pos. 5, 6, 8, 10 in chapter 3), lids (see Fig. 3.4-1, pos. 1, 2 in chapter 3) and the cover of rear control column. Carry out the check of the bonding strips between the particular structural elements of the control system (see point 9.12.2. of this section).

Replace the broken, cut, worn out or mechanically damaged bonding strips. Remove the corrosion of the bolted joints of the bonding strips. Tighten the loosened bolts of the joints.

Reinstall the cover of the rear control column, lids, covers, nose cone.

9.14. REMOVAL / INSTALLATION

9.14.1. Removal and installation of instrument panels

A.	Aids, testing and additional equipment	not required
B.	Material	binding wire in dia of 0.031 to 0.040 in (0.8 to 1 mm)
C.	Tooling	pliers, screwdriver
D.	Referenced information	none

E. Technological procedure

Remove the locking of the hoses of total, static and compensated pressure slid on the outlets of the instruments on the front and rear instrument panels - the locking is carried out with 4 or 5 turns of the binding wire in dia of 0.031 to 0.040 in (0.8 to 1 mm).

Disconnect the hoses of total, static and compensated pressure from the instruments (airspeed indicators, altimeters and vertical speed indicators). Disconnect the controls of towing cable attachments. Disconnect the power supply of the turn-and-bank indicators.

Remove the instruments panels together with the instruments after loosening of 3 bolts on the front instrument panel and 4 bolts on the rear instrument panel.

Remove the individual instruments from the instrument panels. Put the instruments and the panels on the safe place.

Configuration of the instruments on the instrument panel is evident from Fig. 9.2-1 and 9.2-2. Carry out the installation of the instrument panels by the opposite way. Connect and wirelock the hoses of total, static and compensated pressure, connect the power supply of the turn-and-bank indicators.

9.14.2. Replacement of hoses of total, static and compensated pressure

A.	Aids, testing and additional equipment	not required
B.	Material	hoses of total, static and compensated pressure, binding wire in dia of 0.031 to 0.040 in (0.8 to 1 mm)
C.	Tooling	pliers, nippers
D.	Referenced information	2.2.3. periodical maintenance (inspection 4)

E. Technological procedure

Remove the binding wire and disconnect the hoses of the total, static and compensated pressure from all instruments and from the rear part of the fuselage. Remove the hoses. Cut the new parts of the hoses according to the lengths of the removed hoses and replace the original hoses with these ones. Slide all ends of the hoses to the terminals and the connection pieces so that the overlap is as big as possible. Lock the hose ends with 4 or 5 turns of the binding wire in dia of 0.031 to 0.040 in (0.8 to 1 mm). Mark the hoses of the total pressure with labels D, the hoses of the static pressure with labels S. Carry out the inspection of the correctness of the assembly of the total, static and compensated pressure system according to Fig. 9.6-1.

Carry out the leakage test of the total, static and compensated pressure system according to the technological procedure for the leakage test of the total, static and compensated pressure system (point 9.15.1.).

9.14.3. Removal of seat back-rests

A.	Aids, testing and additional equipment	not required
B.	Material	not required

C.	Tooling	spanners from tooling set
D.	Referenced information	none

E. Technological procedure

Remove the back-rests of the front and rear seats. Before removal of the front seat back rest remove the front seat (1) which lies unattached on the floor stiffeners. Then slide out the arresting strap (10) from the rack (18), slide out the bolts from the guideways (7). by means of the control levers (9) of the positioning mechanism (9), and push the back-rest (2) forward (in the direction of flight) out of the guideways.

Unlock and remove two bolts with washers to remove the back-rest of the rear seat.

Carry out the installation of both back-rests in the opposite way.

9.15. INSPECTION / CHECK

9.15.1. Leakage test of total, static and compensated pressure system

A.	Aids, testing and additional equipment	equipment for generation of pressure with connected check airspeed indicator
B.	Material	not required
C.	Tooling	not required
D.	Referenced information	2.2.3. periodical maintenance (inspection 3,4)

E. Technological procedure

By means of the equipment for generation of the positive pressure with connected check airspeed indicator, generate positive pressure corresponding to the airspeed of 210.50 knots (390 km/h) according to the reading of the check airspeed indicator, in the total pressure system line. The pressure must not drop for 5 minutes.

By means of the equipment for generation of the positive pressure with connected check airspeed indicator, generate positive pressure corresponding to the airspeed of 210.50 knots (390 km/h) according to the reading of the check airspeed indicator, in the static and compensated pressure system line. The pressure drop must not exceed 10 km/h within 2 minutes.

Disconnect the equipment for pressure generation after performed test, remove the blinding plugs and connect the lines of the total, static and compensated pressure to the instruments on the front and rear instrument panels in compliance with the diagram in Fig. 9.6-1.

9.15.2. Check of lead seal on the AMU1B.01 Acceleration monitoring unit (if installed)

F.	Aids, testing and additional equipment	not required
G.	Material	not required
H.	Tooling	not required
I.	Referenced information	2.2.3. periodical maintenance (inspection 1, 2, 3, 4)

J. Technological procedure

Carry out the check for integrity lead seal of the AMU1B.01 fuse, battery box, and cable. See fig. 9.9A-1 for seals location.

9.16. COMMON REPAIRS

9.16.1. Repairs of system of total, static and compensated pressure

A.	Aids, testing and additional equipment	not required
B.	Material	pipes, hoses
C.	Tooling	tooling from tooling set
D.	Referenced information	none

E. Technological procedure

The tubing and the hoses of the total, static and compensated pressure system, the hose tails and the distribution pieces are not to be repaired. Only the replacement is carried out. If it is not possible to replace them by new ones, use the equivalent substitutes. The particular parts is must pass the pressure text, i.e. withstand the pressure of 22.45 psi (2 kp/cm2) for 5 minutes.

9.17. EQUIPMENT / FURNISHING LIST

The following equipment / furnishing is approved for using on the sailplane.

9.17.1. Minimum equipment

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

Altimeter:

Type	Manufacturer	Technical specification
LUN 1124.01-8	Mikrotechna-Modřany	TPF 01-3601-82
UI 5934P-3	United Instruments, USA	Code A83 TSO C10b

Airspeed indicator:

Type	Manufacturer	Technical specification
LUN 1106.14-8	Mikrotechna-Modřany	TPF 01-3028-61
LUN 1106.22-8	Mikrotechna-Modřany	TPF 01-3028-61

Safety belts:

Type	Manufacturer	Technical specification
Bagu 5202	GADRINGER	
Schugu 2700	GADRINGER	
Bogu 1400	GADRINGER	

CAUTION: GADRINGER SAFETY BELTS - SERVICE LIFE IS 12 YEARS.

Accelerometer:

Type	Manufacturer	Technical specification
AM 10	Let. přístroje Praha	TPF 01-62

Acceleration monitoring unit (if installed):

Type	Manufacturer	Technical specification
AMU1B.01	VZLÚ-SPEEL s.r.o., Praha	TPF 01-7215-02

9.17.2. Optional equipment

Liquid type compass:

Type	Manufacturer	Technical specification
LUN 1221.1-8	Let. přístroje Praha	TPF 01-3295-69

Turn-and-bank indicator:

Type	Manufacturer	Technical specification
LUN 1211.1	Let. přístroje Praha	TPF 0177-04-59

Vertical speed indicator:

Type	Manufacturer	Technical specification
LUN 1141.04	Mikrotechna-Modřany	TPF 0021-04-55
LUN 1141	Mikrotechna-Modřany	TPF 0021-04-55
LUN 1147.23-8	Mikrotechna-Modřany	TPF 01-3025-60
LUN 1147.10-8	Mikrotechna-Modřany	TPF 01-3025-60

Transceiver:

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

Type	Manufacturer	Technical specification
LS-5	TESLA Kolín	TPTE 13-053/77
AR 4201	Becker	10.911/87
TERRA TX 760 D	TERRA, Austin, Texas	
FSG 71M	W. Dittel GmBH, Germany	10.911/81

Launching hooks:

Type	Manufacturer	Technical specification
TOST G 88/1-83 Lower hook	TOST GmBH, Germany	
TOST E 85/1-85 Forward hook	TOST GmBH, Germany	
A 001 023 L A 001 023 P Side hooks	LETECKÉ ZÁVODY a.s.	

INTENTIONALLY LEFT BLANK

10.9. AM-10 ACCELEROMETER

10.9.1. Purpose

AM-10 accelerometer is intended for determination of g-loads acting on the sailplane in the direction normal to the wing surface.

10.9.2. Technical data

a) Measurement range from -5g to +10g

b) Inaccuracy of reading during static test at normal temperature:

1. With accelerometer in vertical position, zero up, pointer in +1g position ± 0.2g
2. With accelerometer in vertical position, zero down, pointer in -1g position ± 0.2g
3. With accelerometer in horizontal position, pointer in zero position ± 0.2g

c) Inaccuracy of reading during dynamic test at normal temperature:

1. In range from +2g to +10g ± 0.5g
2. In range from -2g to -5g ± 0.5g

d) Maximum g-load due to vibration must not exceed 1.5g

10.9.3. Description and operation

Inertia mass is used as the sensitive element of the accelerometer. The inertia mass is flexibly connected with accelerometer body by means of a crank gear and helical springs counteracting. The inertia mass consists of two identical weights fixed on levers which can rotate on their own axes within a fixed angle, and which are interconnected by means of a gear drive. This design only enables the measurement of the acceleration component acting on the accelerometer body along its vertical axis. When an acceleration is acting on the accelerometer, the moment of inertia forces of the sensitive element, which is in a certain proportion to the acceleration component measured and is balanced by the moment of the counteracting spring, will cause the sensitive element to rotate. The movement of the sensitive element is amplified by the gear mechanism, and transmitted to the accelerometer pointer. The maximum value of the measured acceleration is determined (fixed) by the maximum value pointers (2 and 3).

If the vertical component of the acceleration is acting on the accelerometer, the pendulum weights will change their positions relative to the instrument body, and they will rotate together with the shafts. The moment of forces of the weights and the moment of inertia forces are balanced by the moment of the counteracting spring. It can be computed with sufficient accuracy that the angle through which the weights are turned will be, within the given range, directly proportional to the acceleration. The pointer (1) will therefore fix the momentary value of the acceleration on the accelerometer scale.

The accelerometer does not indicate the acceleration acting along the sailplane longitudinal and lateral axes, because these accelerations produce moments whose effects are counterbalanced. The pointers (2 and 3) fixing the maximum g-loads are reset by a push button located on the lower right band side of the accelerometer.

NOTE: Removal, installation and check of the accelerometer is described in points 10.19.7. and 10.15.7.

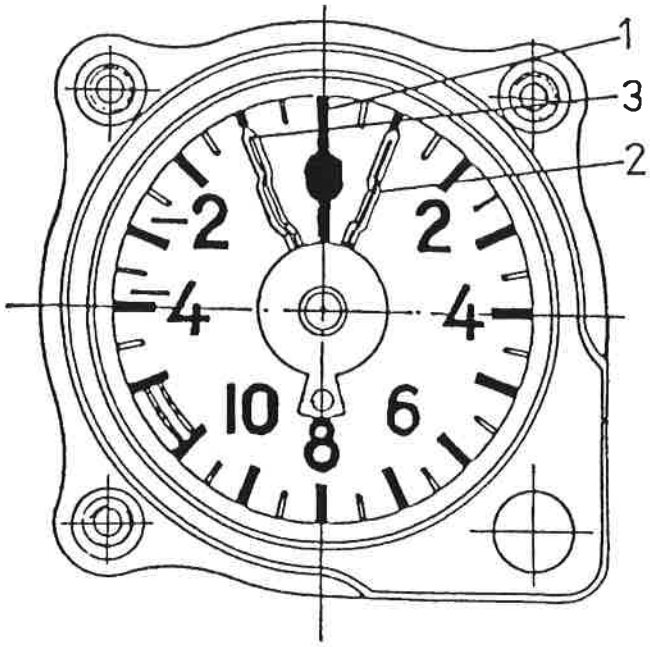


FIG. 10.9-1 AM-10 ACCELEROMETER

10.10. AMU1B.01 ACCELERATION MONITORING UNIT (if installed)

10.10.1. Purpose

The unit is used to monitor vertical acceleration at the sailplane centre of gravity.
The following parameters are recorded by the unit:

- number of flight hours
- number of landings
- table of exceeding of the selected maximum or minimum limit of vertical acceleration local extremes
- matrix of frequency of vertical acceleration local extremes crossing
- sailplane model
- sailplane Serial Number
- sailplane Registration Mark

When a PC (with RS-232 interface) is connected to the AMU, with the unit in Service Mode, the instantaneous value of each monitored parameter can be displayed and transferred to file.

10.10.2. Description

The AMU 1B.01 is a self-contained system which is automatically actuated as soon as weight is off wheel. Before take-off, the pilot must verify the proper operation of the system by means of the TEST pushbutton which will by-pass the reed contact unit. This will actuate the system for a time necessary to enable its pre-flight functional checkout. The system condition is indicated by a remote LED diode. The pilot cannot turn the unit off (the unit has no ON/OFF control).
The correct function indication is on throughout the flight. If, during the pre-flight test or during flight, a failure is indicated or the LED does not illuminate, the sailplane may not operated until the fault is corrected. If a fault is detected in flight, no aerobatic manoeuvres may be performed, and the flight can be finished in a normal way.

Automatic in-flight actuation:

1. The until will automatically actuate as soon as wheel is off wheel during take-off.
2. The until will stop operating within approximately 120 seconds after landing of the sailplane.

Indication

A remote LED diode located on the front instrument panel provides indication of the following conditions:

- **Correct operation:** 1 LED diode light pulse in duration of 1s and period of 2s
- **Data memory failure:** 1 LED diode light pulse in duration of 0.125s and period of 2s
- **Acceleration transducer failure:** 2 LED diode light pulses in duration of 0.125s and period of 2s
- **Control microprocessor failure, or low operating voltage:** LED diode is continuously on
- **Power supply failure, or low operating voltage:** LED diode is off

Troubleshooting:

- **LED diode is continuously on:**
  - Check battery voltage
  - If the battery voltage is satisfactory there is a microprocessor failure.
- **LED diode is off:**
  - Check the fuse
  - Check battery voltage

If the battery voltage is below 6V replace the battery (refer to paragraph 10.13.8. for instructions).
In case of a fuse failure replace the fuse with a new one (refer to legend for Fig. 10.10-1 for fuse type).
In other cases contact the authorized service or the sailplane manufacturer.

Power source:

Two SAFT LSH20 lithium batteries of 3.6V each are used as the source of electric power. These batteries are heavy-duty units capable of operation under extreme temperature conditions.

It is possible to order the power source as a pack from the sailplane manufacturer (Dwg. No. A 850 087 N must be indicated in the order), or the operator can make the power source in accordance with the instructions given below.

- Battery rated capacity: 13 A/h, operating temperature range: - 60°C to + 85°C.
- Loss of capacity: 3% in 1 year, 7% in 2 years

Instructions for fabrication of power source:

- Place two LSH20 lithium batteries (of 3.6V each) side by side and fix them together (e.g. by a tape)
- Connect the two batteries in series, solder on the outlets and provide them with FASTON 6.35 connectors

CAUTION: WHEN LIFTING THE SAILPLANE (AND DURING ITS TRANSPORT ON A TROLLEY) WITH THE POWER SOURCE CONNECTED TO THE UNIT, AUTOMATIC ACTUATION OF THE AMU 1B.01 WILL OCCUR WITH A RESULTANT START-UP OF RECORDING. IF IT IS EXPECTED THAT THE LANDING GEAR WILL BE IN THE WEIGHT-OFF-WHEEL CONDITION FOR A PERIOD LONGER THAN THE TIME REQUIRED FOR START-UP OF RECORDING (20 seconds), THE OPERATOR MUST DISCONNECT THE BATTERIES FROM THE AMU 1B.01 UNIT (SEE PARAGRAPH 10.10.3).

10.10.3. Battery disconnection, connection, and replacement

To disconnect the batteries remove the fuse (located on the frame No. 5) after you have removed the lead seal. To connect the batteries put the fuse in its place and attach a lead seal by means of leading tongs.

NOTE: The above steps may only be done by a person authorized by the sailplane operator. To secure the fuse and the battery box use leading tongs and lead seals (P/N 87194008).

CAUTION: ANY DISCONNECTION, CONNECTION OF BATTERIES OF THE AMU1B.01 ACCELERATION MONITORING UNIT MUST BE RECORDED IN THE SAILPLANE LOGBOOK.

10.10.4. Technical data:

Mass:	130 g max.
Acceleration value:	range: -10.00 to +10.00 g
	resolution: 0.01 g
Flight time:	range: 0h 0min 0sec to 1,000,000 flight hours
	resolution: 1 s
Number of landings:	resolution: 1
Table of limit acceleration crossing:	number of records: 1000
Power:	Battery, 6 to 9 V DC
Power consumption:	0.7 W max.
Fire resistance:	self-extinguishing material
Operating temperature:	-40°C to +50°C
Altitude:	up to 7620 m (25 000 ft)
Lifetime:	10 000 flight hours

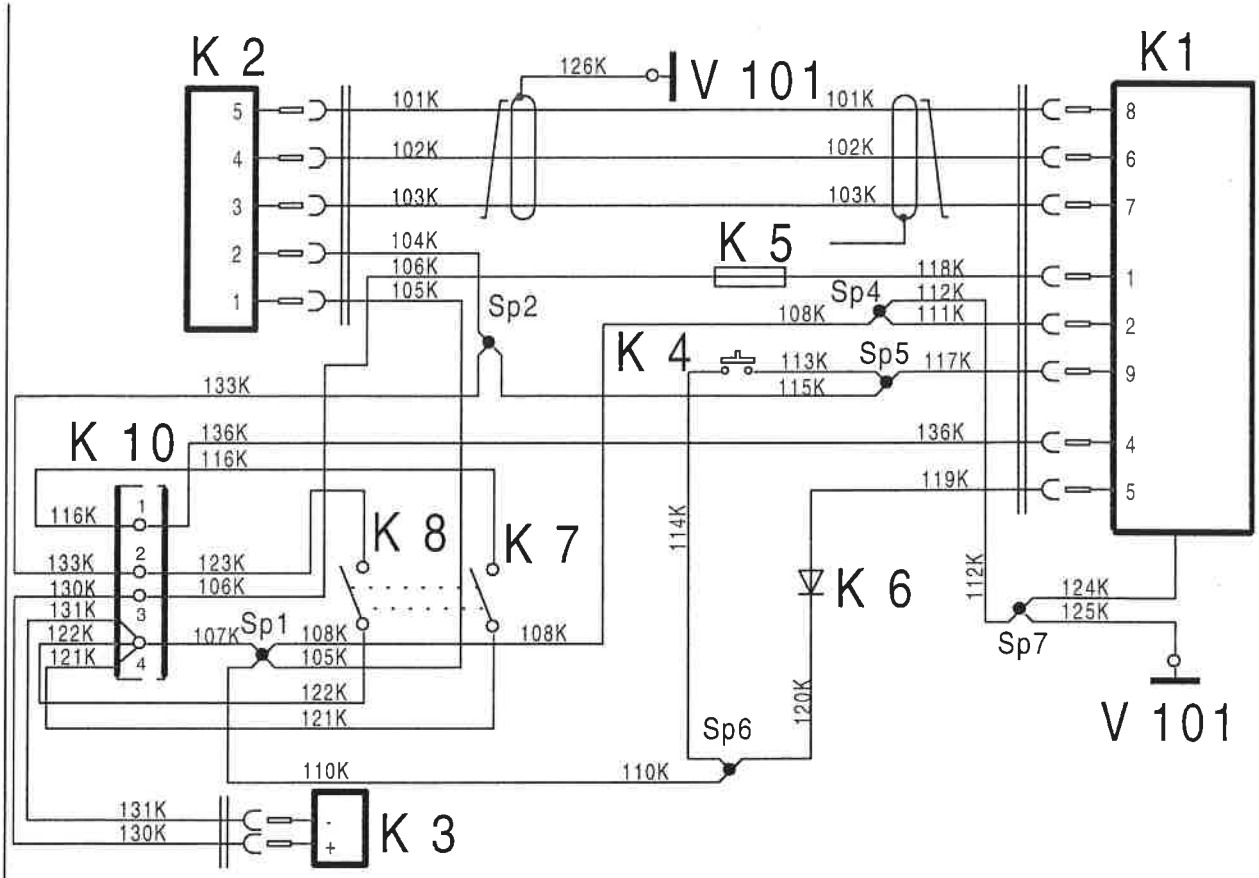


FIG. 10.10-1 AMU 1B ACCELERATION MONITORING UNIT WIRING DIAGRAM

Legend for Fig. 10.10-1 AMU 1B ACCELERATION MONITORING UNIT WIRING DIAGRAM

Designation	Name	Type	Location	Note
K 1	Acceleration monitoring unit	AMU1B	between frames No. 5 and 6	
K 2	Connector	D-SUB-BU09	frame No. 5	
K 3	Battery	A 580 087 N	between frames No. 5 and 6	
K 4	Pushbutton	KNR	front instrument panel	
K 5	Fuse	0.4 CSN 354733F	frame No. 5	
K 6	LED diode	727644-61	front instrument panel	
K 7	Magnetic contact	REED 1	main landing gear	
K 8	Magnetic contact	REED 1	main landing gear	
K 10	Terminal board	75K	frame No. 5	
V 101	Ground	-	-	

10.11. RESERVED

10.12. SERVICING

10.12.1. Inspection of moisture trap D 000 085 N

A.	Aids, testing and additional equipment	not required
B.	Material	not required
C.	Tooling	not required
D.	Referenced information	2.2.2. operational maintenance

E. Technological procedure

Inspect the moisture trap of the total and static pressure system positioned in the front part of the fuselage - behind the frame No. 1.

There must be no condensate in the moisture trap.

CAUTION: IN CASE THAT THE MOISTURE TRAP WAS REMOVED, CHECK IT FOR LEAKAGE AFTER ITS REINSTALLATION. TAKE CARE TO INSTALL THE CUP CORRECTLY.

10.12.2. Cleaning of collector of LUN 1211.1 turn-and-bank indicator

A.	Aids, testing and additional equipment	4.5 V DC power supply, air-pump
B.	Material	polishing paper (fine abrasive paper), varnish
C.	Tooling	screwdriver, scissors, tweezers, wood bar with abrasive paper, hair brush
D.	Referenced information	2.2.3. periodical maintenance (inspection 2,3,4)

E. Technological procedure

Loosen the locking bolt of the holding nut and unscrew the nut on the rear part of the turn-and-bank indicator. Cut the polishing paper to the dimensions app. of 8x12 mm, arrange it to the shape which is drawn on Fig. 10.12-1, pos. 2. Hold the polishing paper in the tweezers (1) and rough - clean the carbon powder off the collector (4) while rotating the flywheel (5) by hand. Clean the dividing grooves on the collector with the spindel-wood and the hair brush.

Disconnect the turn-and-bank indicator from the DC power supply, clean with the hair brush and remove all impurities from the collector with the blow-off rubber ball or air-pump. Do not remove the spring (6) when polishing and clearing the collector. Put on the cover of the turn-

and-bank indicator, screw on the holding nut , lock it with the bolt and secure the bolt with a drop of varnish.

Connect the turn-and-bank indicator to the DC power supply with voltage of 4 V. The direction of rotation of the flywheel must be clockwise when locking at the regulator side. Hold the polishing paper in the tweezers and polish the surface of collector while the turn-and-bank indicator is running.

NOTE: The guarantee period for the turn-and-bank indicator does not expire with removing of the sealing varnish from the locking bolt of the turn-and-bank indicator.

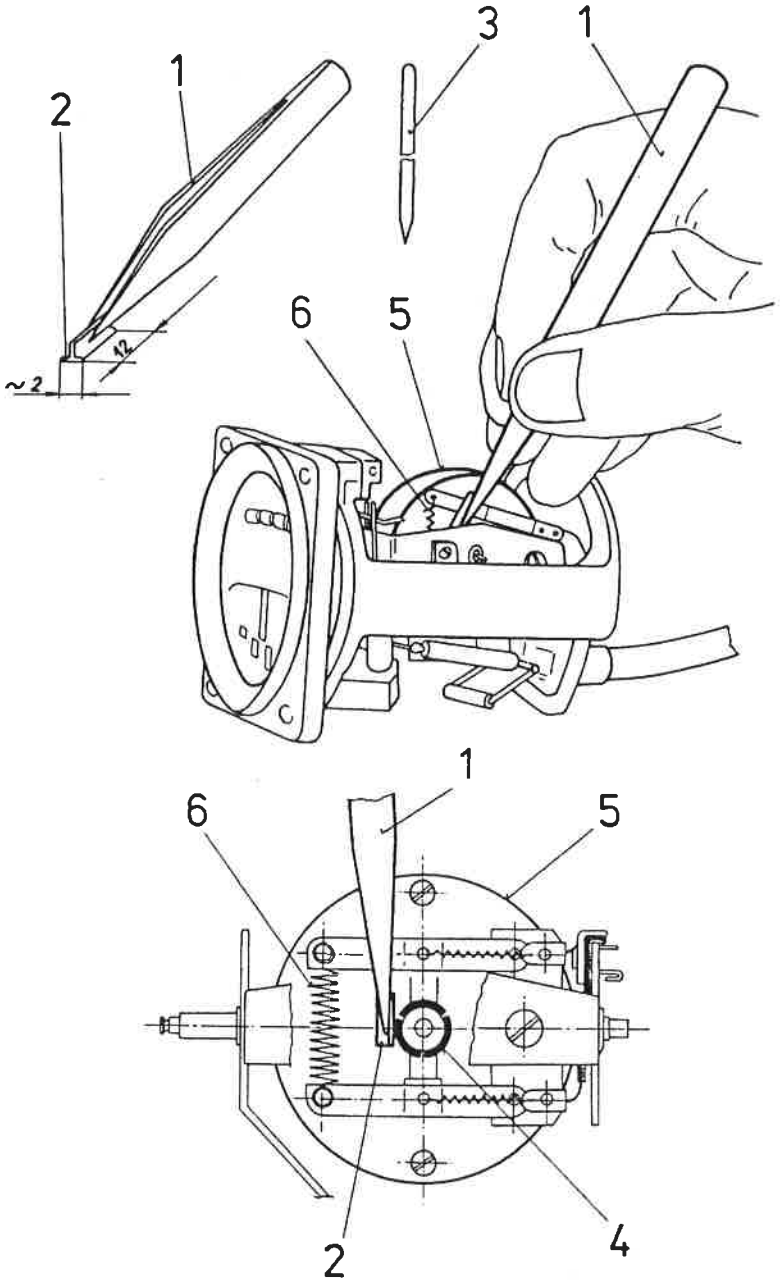


FIG. 10.12-1 LUN 1211.1 TURN-AND-BANK INDICATOR COLLECTOR CLEANING

(1) Tweezers, (2) Polishing paper, (3) Spindle wood bar, (4) Collector, (5) Flywheel, (6) Spring.

10.12.3. LUN 1221.1-8 liquid type compass compensation

A.	Aids, testing and additional equipment	not required
B.	Material	not required
C.	Tooling	wrench, screwdriver
D.	Referenced information	2.2.3. periodical maintenance (inspection 2,3,4)

E. Technological procedure

Carry out the compensation of the liquid type compass on the compass base which enables the accurate turning of the sailplane to the required headings. Carry out the turning of the sailplane manually if the compass base is not available and determine the correct adjusting of the sailplane to the required heading by means of the special equipment, called direction finding plate which is attached into the longitudinal axis of the sailplane.

The direction finding plate has the circular scale, graduated from 0° to 360°, the magnetic needle which gives the magnetic north and the sighhole by which the fixed orientation point in terrain is found out (e. g. factory chimney). Set the required headings from the fixed orientation point according to the circular scale.

Any metal structures or any other metal objects must not be within 100 to 200 m around the place where the compensation is carried out. The persons who carry out the compensation must not have any magnetic objects with themselves (knifes, keys and so on). During the compensation switch on the electric instruments which are used during the flight. Carry out the compensation by turning the screws on LUN 1221.1 liquid type compass marked with „B“ and „C“ by means of the magnetic screwdriver.

Procedure during the compensation

Turn the sailplane first to heading „north“ and then to heading „east“. Record the found out deviations on these headings and use for calculation of the deviation.

Then turn the sailplane successively to heading „south“ and heading „west“. Find out the deviations on these headings and reduce them to the value calculated from both deviations in opposite directions according to this formula:

For heading „south“: $\frac{dN + dS}{2}$

For heading „west“: $\frac{dE + dW}{2}$

dN - ..... deviation from heading „north“

dS - ..... deviation from heading „south“

dE - ..... deviation from heading „east"

dW ..... deviation from heading „west"

Carry out the compensation in direction of north-south with the screw marked with „C", carry out the compensation in the direction east-west with the screw marked with „B".

In the end turn the sailplane to particular headings by 30° and record the remaining deviations on the particular headings.

List the values of the remaining deviations in the table. Give the date when the compass was compensated and the signature of the person by whom the compensation was carried out on the table. Insert the table into the pocket in the front or rear cockpit, depending on which compass was compensated.

10.12.4. Putting airborne battery into operating, battery charging

A.	Aids, testing and additional equipment	power source, voltmeter
B.	Material	not required
C.	Tooling	wrench, screwdriver
D.	Referenced information	none

E. Technological procedure

Putting NKDU 10 or NKDU 10 R airborne battery into operation

NOTE: Before charging remove the batteries (accumulator cells) and connect them as they were originally connected in the box (series connexion). 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:

- **1st cycle** - carry out the balancing charging with current of

  I = 1.0 A for the time of 20 hours. After that, discharge with current of

  I = 1.0 A up to voltage of 1.0 V/cell.

- **2nd cycle** - carry out the normal charging with the current of

  I = 1.0 A for the time of 15 hours. After that, discharge with current of

  I = 1.0 A up to voltage of 1.0 V/cell.

NOTE: 1. Repeat the mode of the 2nd 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.

2. The temperature of the electrolyte must not exceed 40°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.

NKDU 10 or NKDU 10R airborne battery charging

Carry out the airborne battery charging after previous partial or full discharging. Charging current is I = 1.0 A for the time of 15 hours.

Electrolyte (NKDU 10, NKDU 10 R, NKDU 11)

The electrolyte is a solution of potassium hydroxide (KOH) and distilled water with 20 g of $LiOH.H_2O$/liter.

The density of electrolyte is prescribed to be 1.19 to 1.21 $g.cm^{-3}$ at the temperature of 20°C. The electrolyte level must be between the marked marks on the vessel.

Putting NKDU 11 (new or stored) airborne battery into operation

Clear the cells, renew the preservation of the metal parts, connect the battery connections and tighten well. Fill the new cells or the cells put out of operation with new electrolyte and leave them at rest at least for 2 hours. Then inspect the voltage of all cells. Leave the cells without the voltage for next 10 hours at rest and reject the cells which do not show voltage even after 12 hours.

Inspect and/or adjust the density and level of the electrolyte in the cells with verified voltage. Then charge the cells as follows:

1st cycle: - extended charging with current of 1.1 A for the time of 30 hours

- normal discharging with current of 1.1 A up to voltage of 1.0 V per cell.

2nd cycle: - normal charging with current of 1.1 A for the time of 12.5 hours

- normal discharging with current of 1.1 A up to voltage of 1.0 V per cell

3rd cycle: - normal charging with current of 1.1 A for the time of 12.5 hours

The battery is prepared for the normal operation after the 3rd cycle of charging. It is recommended to carry out the discharging test after the 2nd cycle and make up the battery of the cells with the same capacity if possible, or assort the cells in this way during discharging in the 2nd cycle already.

NKDU 11 airborne battery charging

The battery is normally discharged by the current of 1.1 A for the time of 12.5 hours. After every 10 - 12 cycles is necessary to use the increased charging by the current of 1.1 a for the time of 20 hours at the regular discharging of the rated capacity.

It is recommended to carry out the extended charging by the current of 1.1 A a for the time of 30 hours at the irregular discharging once a month at least. Carry out this extended charging always after discharging of the cells below the final discharging voltage.

The electrolyte temperature must not exceed 40°C during the charging. It is necessary to break the charging in this case and continue after the temperature drops.

10.12.4. Processing of AMU1B.01 data (if installed)

A.	Aids, testing and additional equipment	PC (notebook) minimum requirements for the PC are Pentium, 16 MB RAM, operating system Windows 95, AMU1C.EXE program, RS 232 Standard serial interface
B.	Material	not required
C.	Tooling	not required
D.	Referenced information	2.2.3. periodical maintenance (inspection 1, 2, 3, 4)

E. Technological procedure

The operator must ensure, at least once during a calendar year or after 100 hours of operation (whichever occurs first), the readout of data from the acceleration monitoring unit into a PC, and send the file by e-mail to the sailplane manufacturer.

CAUTION: IN THE EVENT OF A LANDING WITH THE LANDING GEAR RETRACTED THE DATA FILE TOGETHER WITH THE DATA FROM THE SAILPLANE OPERATION BOOK OF RECORDS MUST BE SENT TO THE SAILPLANE MANUFACTURER WITHOUT DELAY.

Procedure for readout of data from AMU1B.01 to PC (notebook) and sending the data file

(This procedure may only be done by a person authorized by the sailplane operator.)

1) Create an AMU1B directory in your PC (notebook)
2) Install the AMU1C.EXE program from the supplied CD-ROM into your PC (notebook) by running **install.bat**
3) Locate the sailplane on the ground in a sheltered area and secure it against spontaneous movement.
4) Connect your PC (notebook) to the AMU1B.01 using the supplied cable (A 580 083 N). The indication LED diode must indicate correct operation of the AMU1B.01.
5) Start the AMU1C.EXE program (communication language will be set automatically in accordance with the operating system used).
6) Dialog window will appear after program activation. Check the serial port setting. If necessary, set it using the following procedure:

Select item Setup in the dialog window and item Communication.
A new dialog window will appear. Select communications serial port and select item Test. If communication with the acceleration monitoring unit is established (message "Communication [port x] is OK" appears), select OK. If communication is not established (message "Communication [port x] is error" appears) select the next communications serial port and repeat the above procedure. After the communication check select item Export Data. The data will be automatically entered in the file.

7) After readout of the recorded date in the file send the file without delay by e-mail to the address **safelife@let.cz**. Together with the data from the AMU1B.01 send an extract from the sailplane operation book of records showing the following information:

sailplane model

sailplane serial number

sailplane registration mark

total number of flight hours, total number of solo flights

total number of flight hours, total number of dual flights

total flight time and number of flights with wingtip extensions

number of flight hours of aerobatic flights-solo

number of flight hours of aerobatic flights-dual

total duration of aerobatic flights

number of winch launches and aerotow launches.

at the time of data readout from the AMU1B.01. In justifiable cases the data can be mailed on a floppy disk, in a suitable pack to prevent its damage, to the address:
Fatigue analysis group,
LETECKÉ ZÁVODY a.s., 686 04 Kunovice.

NOTE: If there is an unsubstantiated discrepancy between the data recorded by the AMU1B.01 and that shown in the sailplane operation book of records regarding the total number of flight hours and the number of flights, the difference will be considered as aerobic flight time for the purpose of safe life calculation.

LETECKÉ ZÁVODY a.s. will analyze the supplied data and calculate the safe life. The operator will receive the result of this calculation together with a conclusion. There are two possibilities:

a) The conditions specified by the sailplane manufacturer for the safe lifetime are met:
- Under the existing operating conditions the sailplane can be operated without limitations.
- After the safe life limit specified by the sailplane manufacturer is reached it can be extended on a case by case basis provided that the sailplane has been operated under favourable conditions (small percentage of aerobatics).

b) The conditions specified by the sailplane manufacturer for the safe lifetime are not met.

- The sailplane operation will either be limited (e.g. by reducing the proportion of aerobatic flight hours to total flight hours), to maintain the specified lifetime, or a new safe lifetime will be specified which will be based on the data supplied by the operator.

NOTE: The AMU1C.EXE program for data recording on a PC (notebook) is implemented under Windows 95/98 operating system. The minimum requirements for the PC are Pentium, 16 MB RAM, operating system Windows 95. RS 232 Standard serial interface is used for the data transfer between the acceleration monitoring unit and the PC.

Information to be provided by the sailplane operator:

Example of an extract from the sailplane operation book of records

Sailplane registration mark :		OK - 2000
Sailplane model:		L-13AC
Sailplane S/N:		029110
Owner:		LZ, a. s.
Operator:		LZ, a. s.
Acceleration monitoring unit:	AMU1B.01	S/N 03

AMU1B.01 data file name corresponding to the above data: 02911020021117124505.amu

Flight hours:	total: 11 h 09 min *(11.15 flight hours)*		
	solo: 4 h 27 min	solo	40%
	dual: 6 h 42 min	dual	60%
Time of aerobatics:	solo: 0 h 25 min *(1.4 total flight hours)*		
	dual: 0 h 59 min		
Wing tip extensions:	solo: 2 h 8 min		
	dual: 3 h 26 min		
Other operation:	solo: 1 h 54 min		
	dual: 2 h 17 min		
Launches:	total:	45 launches	
	aerotow:	23 launches	
	winch:	22 launches	

NOTE: Aerobatic flights make for 13% of the total flight hours $\left(\frac{1.4 \text{ hrs aerobatics}}{11.15 \text{ hrs total}} \times 100\right)$

.....

Date: 17. Nov. 2002 Prepared by: Josef Dvořák

Position

10.13. REMOVAL / INSTALLATION

10.13.1. LUN 1106.14-8 airspeed indicator removal and installation

1.	Aids, testing and additional equipment	not required
2.	Material	binding wire in dia of 0.031 to 0.040 in (0.8 to 1 mm)
3.	Tooling	screwdriver, pliers
4.	Referenced information	2.2.3. periodical maintenance (inspection 4)

5. Technological procedure

Disconnect the tubing of the total and static pressure system from the airspeed indicators on the front and rear instrument panels. Remove the airspeed indicators from the instrument panels and hand them over to test room for periodical maintenance.

Install the airspeed indicators on the instrument panels after return of the airspeed indicators from the test room.

Connect the tubing of the total and static pressure system so that the overlap is as big as possible. Lock the ends of the tubing with 4 to 5 turns of the binding wire in dia of 0.031 to 0.040 in (0.8 to 1 mm).

10.13.2. LUN 1124.01-8 altimeter removal and installation

A.	Aids, testing and additional equipment	not required
B.	Material	binding wire in dia of 0.031 to 0.040 in (0.8 to 1 mm)
C.	Tooling	screwdriver, pliers
D.	Referenced information	2.2.3. periodical maintenance (inspection 4)

E. Technological procedure

Disconnect the tubing of the static pressure system from the altimeters of either model on the front and rear instrument panels. Remove the LUN 1124.01-8 altimeters from the instrument panels and hand them over to the test room for periodical maintenance.

Install the LUN 1124.01-8 altimeters on the instrument panels after their return from the testing room. Connect the tubing of the static pressure system to either model of altimeter so that the overlap is as big as possible. Lock the ends of tubing with 4 to 5 turns of the binding wire in dia of 0.031 to 0.040 in (0.8 to 1 mm).

10.13.2a. UI 5934P-3 altimeter removal, maintenance and installation

NOTE: According to the directions of the UI 5934P-3 altimeter manufacturer

10.13.3. LUN 1147.23-8 vertical speed indicator removal and installation

A.	Aids, testing and additional equipment	not required
B.	Material	binding wire in dia of 0.031 to 0.040 in (0.8 to 1 mm)
C.	Tooling	screwdriver, pliers
D.	Referenced information	2.2.3. periodical maintenance (inspection 4)

E. Technological procedure

Disconnect the tubing of the static pressure system from LUN 1147.23-8 vertical speed indicator on the front instrument panel. Remove the vertical speed indicator from the instrument panel and hand it over to the test room for periodical maintenance.

Install the vertical speed indicator on the instrument panel after return of the vertical speed indicator from the test room. Connect the static pressure system tubing so that the overlap is to be as big as possible. Lock the tubing ends with 4 to 5 turns of the binding wire in dia of 0.031 to 0.040 in (0.8 to 1 mm).

10.13.4. LUN 1141.04 vertical speed indicator removal and installation

A.	Aids, testing and additional equipment	not required
B.	Material	binding wire in dia of 0.031 to 0.040 in (0.8 to 1 mm)
C.	Tooling	screwdriver, pliers
D.	Referenced information	2.2.3. periodical maintenance (inspection 4)

E. Technological procedure

Disconnect the tubing of compensated pressure from LUN 1141.04 vertical speed indicators on the front and rear instrument panels. Remove the vertical speed indicators from the instrument panels and hand them over to the test room for periodical maintenance.

Install the vertical speed indicators back to the instrument panels after return of the vertical speed indicators from the test room.

Connect the compensated pressure system tubing so that the overlap is as big as possible. Lock the tubing ends with 4 to 5 turns of the binding wire in dia of 0.031 to 0.040 in of (0.8 to 1 mm).

10.13.5. LUN 1211.1 turn-and-bank indicator removal and installation

A.	Aids, testing and additional equipment	not required
B.	Material	not required
C.	Tooling	screwdriver
D.	Referenced information	2.2.3. periodical maintenance (inspection 2, 3, 4)

E. Technological procedure

Disconnect the turn-and-bank indicators from the power supply and remove them from the instrument panels. After inspection (see point 10.15.5.) install the turn-and-bank indicators on the instruments panels and connect them through the 12 V/4.5 V voltage regulator to the power supply (airborne battery) or connect them directly to the battery of 4.5 V DC.

Inspect the operation of the turn-and-bank indicators after installation of the turn-and-bank indicators and after their connection to the power supply. The flywheel must start running smoothly, with a starting time not exceeding 20 seconds.

10.13.6. LUN 1221.1-8 liquid type compass removal and installation

A.	Aids, testing and additional equipment	not required
B.	Material	not required
C.	Tooling	screwdriver
D.	Referenced information	2.2.3. periodical maintenance (inspection 4)

E. Technological procedure

Remove the liquid type compasses from the instrument panels and hand them over to the test room for periodical maintenance.

Install the liquid type compasses on the instrument panels after return of the liquid type compasses from the test room.

Carry out the compensation of the liquid type compasses according to the technological procedure 10.12.3. mentioned in this section.

10.13.7. AM-10 Accelerometer removal and installation

A.	Aids, testing and additional equipment	not required
B.	Material	not required
C.	Tooling	screwdriver

D.	Referenced information	2.2.3. periodical maintenance (inspection 2, 3, 4)

E. Technological procedure

Remove the accelerometers from the instrument panels and hand them over to the test room for periodical maintenance. Install the accelerometers on the instrument panels after return of the accelerometers from the testing room.

10.13.8. Replacement of the AMU1B.01 acceleration monitoring unit battery (if the AMU1B.01 is installed)

A.	Aids, testing and additional equipment	not required
B.	Material	seals (P/N 87194008)
C.	Tooling	screwdriver, leading tongs
D.	Referenced information	2.2.3. periodical maintenance

E. Technological procedure

The batteries must be replaced after 4 years or 200 flight hours (whichever occurs first), or if a battery failure occurs (indicated by low operating voltage).

Battery replacement:
- Remove the lead seal.
- Screw off 4 screws from the A 580 086 N battery box.
- Remove the A 580 087 N batteries and disconnect faston connectors from the wiring.
- Connect new A 580 087 N batteries to the wiring by means of faston connectors and insulate the connectors by shrinking tubing.
- Put the batteries in the box and attach the box cover with 4 screws.

After battery replacement secure the battery box with a lead seal and enter the date of replacement in the sailplane logbook.

NOTE: The above steps may only be done by a person authorized by the sailplane operator. To secure the fuse and the battery box use leading tongs and lead seals (P/N 87194008).

CAUTION: ANY DISCONNECTION, CONNECTION, OR REPLACEMENT OF BATTERIES OF THE AMU1B.01 ACCELERATION MONITORING UNIT MUST BE RECORDED IN THE SAILPLANE LOGBOOK.

10.15. INSPECTION / CHECK

10.15.1. LUN 1106.14-8 airspeed indicator check

A.	Aids, testing and additional equipment	pressure supply, checking water-column manometer
B.	Material	not required
C.	Tooling	not required
D.	Referenced information	2.2.3. periodical maintenance (inspection 4)

E. Technological procedure

Connect the airspeed indicator to the pressure source and check for the basic inaccuracies of airspeed indicator reading at the temperature of +20°C ± 5°C. Determinate the inaccuracy of the airspeed indicator by comparing the reading of checked airspeed indicator with the reading of the checking manometer, while creating pressure in the airspeed indicator which corresponds to the value of checked divisions of the scale.

Observe the following conditions when performing the above mentioned tests:

- temperature of 20°C ± 5°C
- permanently acting vibration with loading from 0.1 to 0.3 g or vibration by buzzer
- vertical position of airspeed indicator scale.

NOTE:
- carry out reading on the scale divisions while charging the value of airspeed in both directions, it means during change of the airspeed indicator readouts from minimum to maximum and backward
- action of pressure on each checked division of scale must be 30 s at the least
- at the value of 200 kts apply the pressure for a period of 15 minutes at least
- the check manometer must be placed in normal conditions and it must not be subjected cannot liable to check vibration. It must have the valid calibration certificate. Inspection of the testing equipment must be carried out once per month in a test laboratory.

10.15.2. LUN 1124.01-8 altimeter check

A.	Aids, testing and additional equipment	low-pressure chamber, mercury barometer
B.	Material	not required
C.	Tooling	not required
D.	Referenced information	2.2.3. periodical maintenance (inspection 4)

E. Technological procedure

Check the altimeter for leakage and inaccuracy in reading at the test room.

Check the altimeter airtightness at the temperature of +20°C ±5°C. Fit the hose of the underpressure source on the altimeter outlet and create and underpressure corresponding to and altitude of 5000 m. At this value shut off the underpressure source and observe the altitude loss (as indicated by the altimeter pointer) which must not exceed 30 m for a period of 1 minute. Then turn the knob (for barometric scale setting) through 90° and repeat the leakage test four times, always rotating the knob through 90°. The result of the test is satisfactory if the leakage (decrease in underpressure) at an altitude of 5000 m does not exceed 30 m during 1 minute.

To check the inaccuracy in altimeter reading, locate the altimeter on a test panel vibrating at 0.1g to 0.3g, connect it to the pressure (underpressure) source, and create a pressure of 1013.25 mb (760 mm Hg) according to the check barometer.
Set both pointers to zero by means of the knob on the altimeter. Then create underpressure corresponding to the values of checked divisions of the altimeter scale. Determine the inaccuracy by comparing the reading of the checked altimeter with the reading of the check barometer.
When checking the altimeter for reading inaccuracy, observe the following conditions:

- temperature of +20°C ±5°C
- permanently acting vibration of the test panel with loading between 0.1g and 0.3g
- check the values indicated in the table of point 10.2.2., page 10 - 5 of this section, while changing the altitude in both directions
- vibration may be stopped at the moment when the readout is taken
- the check barometer must be placed in normal conditions and it must not be subjected to the effect of check vibration. If must have the valid calibration certificate, and its error of indication at the altitudes being checked must no exceed ±0.2 mb.

Checked values on scale (in meters)	Permissible inaccuracies in meters under temperature			
	+20°C	+60°C	-30°C	-45°C
0	±20	-35 +15	-35 +15	-45 +25
300	±20	-	-	-
900	±25	-	-	-
1800	±30	-	-	-
3000	±45	-90 +45	-90 +45	-100 +50
4500	±70	-	-	-
6000	±90	-180 +100	-180 +100	-200 +120

10.15.2a. UI 5934P-3 altimeter check

NOTE: According to the directions of the UI 5934P-3 altimeter manofacturer.

10.15.3. LUN 1147.23-8 vertical speed indicator check

A. Aids, testing and additional equipment — low-pressure supply, barometer

B. Material — not required

C. Tooling — not required

D. Referenced information — 2.2.3. periodical maintenance (inspection 4)

E. Technological procedure

Check for the vertical speed indicator reading inaccuracies as follows:

Set the vertical speed indicator pointer to 0, connect the vertical speed indicator to the low-pressure supply which is also connected to the barometer and to the check inclined column and change the pressure with such a speed that the lower edge of meniscus level of the liquid of check inclined column shows continuously the checked speed for the time which is necessary for the check of vertical speed indicator reading. The pressure dwell on each of inspected values must be 30 s at the least. Check the vertical speed indicator reading under the low-pressure which corresponds to the altitude of 8202.5 to 11 483.5 ft checked on a check altimeter. The vertical speed indicator is subjected to the vibration with the loading of 0.1 to 0.3 g or vibration by buzzer. Vertical speed indicator scale must be in the vertical position, and ambient temperature of +20°C ±5°C.

10.15.4. LUN 1141.04 vertical speed indicator check

A. Aids, testing and additional equipment — low-pressure chamber, sealing cap, mercury barometer

B. Material — not required

C. Tooling — not required

D. Referenced information — 2.2.3. periodical maintenance (inspection 4)

E. Technological procedure

Check the vertical speed indicator in the test room for leakage and inaccuracy in reading.
The check for leakage, seal the outlet with the rubber cap and place the vertical speed indicator into the low-pressure chamber. Create the low-pressure of 200 mm Hg in the chamber and observe if the pointer does not show the deflection from the zero position. If the vertical speed indicator is leakproof , remove the sealing cap from the outlet, leave the vertical speed indicator in the low-pressure chamber and carry out the check of the reading accuracy.
The check the reading accuracy reduce the pressure in the low-pressure chamber with such a speed that the vertical speed indicator placed in the chamber shows the defined value of the climb.
Observe the pressure drop on the mercury barometer and measure the time period during which the pressure drops from 700 to 670 mm Hg. Carry out this test in both directions of the pressure change (i.e. pressure drop and rise) on the values of 4 and 10 KNOTS.
The measured time must be within the limits mentioned in the table.

Temperature °C	KNOTS	Calibrating time in seconds		
		lower limit	normal	upper limit
18	4 ±0.4	172.5	181.3	190.0
20		174.0	182.7	191.5
22		174.9	183.7	192.4
26		176.9	186.1	195.4
30		179.8	189.0	198.3
18	10 ±1	68.9	72.5	76.0
20		69.4	73.0	76.6
22		69.9	73.5	77.1
26		70.9	74.5	78.2
30		71.9	75.5	79.1

Take the readouts the vertical speed indicator placed in the low-pressure chamber and adjusted to one of the above mentioned values. According to time needed for the pressure change from 700 to 670 mm Hg, determinate if the vertical speed indicator meets the tolerances.
The pointer of vertical speed indicator must return from each value for the climb and descent to zero position with accuracy of ± 0.5 mm. The pointer motion must be smooth, without

grabbing and arresting. The pointer must not deflect from zero position by more than 0.5 mm when the instrument is turned through 90° around its longitudinal axis.

10.15.5. LUN 1211.1 turn-and-bank indicator check

A.	Aids, testing and additional equipment	not required
B.	Material	not required
C.	Tooling	not required
D.	Referenced information	2.2.3. periodical maintenance (inspection 2,3,4)

E. Technological procedure

Remove the turn-and-bank indicator from the instrument panel and check for mechanical damage of for broken level tube. If these defects are found, replace the turn-and-bank indicator by a new one, and have the original one repaired.

10.15.5. LUN 1221.1-8 liquid type compass check

A.	Aids, testing and additional equipment	rotary table, magnet
B.	Material	not required
C.	Tooling	screwdriver
D.	Referenced information	2.2.3. periodical maintenance (inspection 4)

E. Technological procedure

Check the liquid-type compass for accuracy, dragging (error caused by friction) and delaying of compass card at the inclination of 20° in the test room.

Remove the compensation equipment and place the liquid type compass on the nonmagnetic rotary table. Turn the table in intervals of 30° and after tapping on the case of the compass read the deflection which should not exceed 1°.

Check the error due to dragging, resulting from the friction of the pin in the bearing, with the compass card tilled by 5° successively to both sides. Carry out the tilting by means of a weak magnet. The compass card must return to the original position with the error of less than 1° after magnet removal. The vibration must not act on the compass during this test.

Check for dragging at the inclination of 20° by tilting the compass by 10° to the left or to the right, the compass card must not drag during rotation through 360°.

10.15.7. AM-10 accelerometer check in test room

A.	Aids, testing and additional equipment	special device
A.	Material	not required
B.	Tooling	not required
C.	Referenced information	2.2.3. periodical maintenance (inspection 2,3,4)

D. Technological procedure

Conduct a static test of the accelerometer to check for the reading inaccuracy at +1g and -1g.

The test is to be conducted in the test room, at normal temperature (+20°C ±5°C), under permanently acting vibration with loading from 0.1g to 0.3g or vibration by buzzer, by means of a special device.

Locate the accelerometer so that the plane of its scale is coincident with the vertical plane, with the vertical plane, with the zero up. The accelerometer pointer must indicate the acceleration of +1g (permissible inaccuracy not more than ± 0.2g).

With the zero below the vertical plane of the scale, the accelerometer pointer must indicate the acceleration of -1g (permissible inaccuracy not more than ± 0.2g).

Locate the accelerometer to that the plane of its scale coincides with the horizontal plane. The accelerometer pointer must come to rest in zero position (permissible inaccuracy not more than ± 0.2g).