



MANDATORY BULLETIN

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Concerning: Technical Manual of the L13 Sailplane - 4th EDITION - FEBRUARY 1977(Do-L13-1132.3)

Reason: Prolongation of the periodical inspections time limits and time to overhaul for L 13 Sailplane.
This bulletin cancels inf. bulletin L 13/092b.

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To be carried out by: Owner.
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Manufacturer

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TECHNICAL MANUAL
OF THE
L13 SAILPLANE

4th EDITION - FEBRUARY 1977



AERONAUTICAL WORKS LET UH. HRADIŠTĚ-KUNOVICE

CZECHOSLOVAKIA

FOREWORD

The scope of this manual is to inform all those who operate and maintain the Blanik L-13 sailplane. It is intended to supplement the general instructions for use, maintenance and operation of this sailplane.

The manual contents consists of:

- Part I — Technical description
- Part II — Instructions for operation

PART I — TECHNICAL DESCRIPTION

This part contains general specifications, including dimensions, weights, performances and technical descriptions of the sailplane outfit and equipment. This part is intended to provide general information on this airplane.

PART II — INSTRUCTIONS FOR OPERATION

This contains all necessary hints for the attending personnel, further instructions for repairing damaged parts which are not subjected to too much stress, and instructions on remedying all minor defects, which can be carried out within the normal attendance work of the sailplane.

The user will be acquainted with any additional information or changes in this manual contents due to alteration of the sailplane design, or necessary supplements of information concerning the sailplane attendance. This shall be done by means of Bulletins. It is the user's duty to effect the respective alterations in the manual contents as soon as he receives the Bulletin containing such alterations and to make a note about it in the Survey of the issued Bulletins on Page 2.

It should be remembered, for the sake of completeness, that in this manual contents are included all Bulletins issued before January 1, 1963. The Bulletins mentioned above are as follows:

Service Bulletins - L 13/001, L 13/006, L 13/010, L 13/014, L 13/046,
Information Bulletins - L 13/015-B, L 13/027, L 13/043.

SURVEY OF BULLETINS INFLUENCING THIS MANUAL CONTENTS.

(In the column "Class of bulletin" insert the letter "I" – in the case of an Information Bulletin, whereas the letter "S" applies to a Service Bulletin, whereas the letter "M" applies to a Mandatory Bulletin).

No.	No. of bulletin	Class of bulletin	Alteration effected in the following Clauses	Alteration carried out by
1	L13/059	M	Part II, Chapter II., Clause 3. Periodical inspections, lubrications and checkings are abolished and substituted by new Clause 3. It concerns 108-113 pages.	
2	L13/078a	M	Part I, Chapter I, section 2b Part II, Chapter II, section 3, item 3.2 Controls. Changed parts of revised pages No. 4, 12, 108/3, 108/3a, 108/3b are identified with vertical line Date on page 108/3 was changed to Mar 25/97. New page 108/3a, 108/3b with date Mar 25/97.	
3	L13/090a	M	Title page, Part II, Chapter II, section 3, Periodical inspections, lubrications and checkings. Changed parts of revised pages, i.e. title page, page 6, 107a and 108/1 are identified with vertical line. Date on the revised pages was changed to Apr. 27/2000. Now page No. 107b, 107c.	

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CHAPTER II

SAILPLANE MAINTENANCE

1. PRINCIPLES OF SAILPLANE SURFACE MAINTENANCE

To achieve durability of the smooth surface of the sailplane and to prevent the possible occurrence of corrosion on the parts of airframe, the following instructions for sailplane maintenance are to be adhered to:

- a) After each washing of the sailplane or after rain, the sailplane surface is to be wiped dry.
- b) Only dry covers should be used for protection of the sailplane (e. g. when the sailplane is parked outside the hangar). If the sailplane covers are wet, it is necessary to dry them prior to use.
- c) To carry out regular maintenance in accordance with the instructions given in Clauses: Everyday Inspection and Periodical Inspections.

Maintenance after every 3 months:

- d) Butt joints of covering sheets are to be coated with a colourless varnish in order to avoid the occurrence of corrosion on the unprotected edges.
 - e) Steel parts which are not protected by coating are to be cleaned with technical grade petrol and greased with a thin layer of vaseline.
- Adhering to these principles is a condition for asserting of any possible claims.

2. EVERYDAY INSPECTION

Correct and regular maintenance of the sailplane is a requirement on which the sailplane reliability, durability and efficiency depend. When maintaining the sailplane, be guided by the following hints which represent the minimum program of correct everyday maintenance.

The mentioned inspection is to be accomplished at the end of a flying routine day.

a) Fuselage

The fuselage is to be kept constantly clean inside as well as outside. Make sure that no damage has occurred to it, that no rivets have come loose and that there are no deformations on the fuselage skin. The doors of the mounting and checking openings must be closed properly. The front windshield plexiglass, as well as those of the cockpit canopy and rear cover must not be dirty. Dust or mud adhering to the plexiglass is to be removed by a wetted soft fabric or buckskin. A "kapolit" or motor-car polish are to be used for cleaning. It is not allowed to use varnish thinner, petrol, benzol, spirit, turpentine or nitrolacquers. After having cleaned the window, polish them with a clean flannel rag.

b) Wing

The wing surface must be kept absolutely clean, and especially so, its upper surface. Check whether or not the wing covering is damaged or deformed and whether the rivets have not come loose. Correct closing of the mounting and checking openings doors is to be checked as well. Inspect movable parts of the wing and make sure that there are no foreign bodies wedged between them and whether the locking pins are correctly secured. Take the cover off the gap between the wing and fuselage and check the securing of the main pins and connections of the controls. The expansion pin of the main wing hinge (Sailplanes of 25th and earlier batches) is to be inserted as far into the hinge as to its recess. Should it not be so, the expansion pin is to be unlocked, pulled out and put correctly in place; see Chapter III, Cl. 1. After the check, put the cover again in place.

c) Tail unit

Make sure that rudder, elevator and trimming tabs are free to move. Inspect the coverings of the horizontal and vertical tail surfaces and see that the covering sheets are not deformed and rivets are not loosened. Special care should be taken when inspecting the riveted joint between the fin and fuselage. In case of loosened rivets in this joint, the sailplane is not allowed to be employed for flying until the defect has been remedied. See that the rudder and elevator coverings are not worn through or torn. Fold upwards the rear portion of fuselage and check whether the hinge pins of the rudder and elevator and the connecting pin of the horizontal folding tail unit on the bulkhead No. 15 are correctly secured. Make sure at the same time, that the bushing of this pin, draw. No. L 13 102 - 25.1, is not loose and is not rotating simultaneously with secured pin. A glider with the above defect must not be released for flying.

d) Controls

Check whether the controls reach to their stops and that there is no undesirable play in their movements. Make sure that no part has been deformed.

e) Landing gear

The undercarriage and surrounding areas are to be kept clean. Remove dust and sticking mud by washing. Check correct function of the brake and shock absorber. Check the pressure in the air tube in the undercarriage wheel tyre, increasing it - if necessary - to a value of 2.6 kg/sq. cm. If 30 or more take-offs have occurred since the shock absorbers were greased for the last time, these lubricators are to be greased again.

f) Outfit

Make sure the instrument panels and first-aid kit are in their right places. Check whether the instrument panels are not damaged. If electrical outfit is provided in the sailplane, inspect the area close to the accumulator battery to see that there is no spilt acid on it. The spilt surfaces are to be washed with soda solution and dried. After having finished the flight, the battery is to be handed over to the charging station for recharging.

INSPECTION INTERVALS

Item	Description	Model-designation	Owerhaul	Service life
A	<u>FLIGHT INSTRUMENT</u>			
1	Airspeed indicator	LUN 1106-8	-	on condition
2	Rate-of-climb indicator, 5m/s	LUN 1141	-	on condition
3	Rate-of-climb indicator, 30m/s	LUN 1147	-	on condition
4	T... - and - tank indicator	LUN 1211.1	-	on condition
5	Altimeter	LUN 1124.01	-	on condition
6	Liquid compass	LUN 1222.1	-	on condition
B	<u>LANDING GEAR</u>			
1	Wheel with brake	HP 4741-Z	-	on condition
2	Tyre with inner tibe	350x135	-	on condition
3	Shock absorber	L13.501-17	-	on condition
	a) Shock absorber packing collars	-	-	2000 ± 100hr or 10000 ± 500 take-offs/16yr.
	b) Tail wheel (optional)	L13J.600-09.P5	-	on condition
C	<u>ELECTRICAL EQUIPMENT</u>			
1	Accumulator battery	12A10	-	on condition
2	Switch	V - 45	-	on condition
D	<u>COMMUNICATION EQUIPMENT</u>			
1	Transceiver (optional)	LS-5	-	on condition
E	<u>HOSES</u>			
1	Pitot - static system hoses	-	-	4000 hr/16yr.
F	<u>TOWING DEVICE</u>			
1	Safety tow release (applies to sailplanes on which it is installed)	EUROPA G 88	2000 take-offs	to be determined by original equipment manufacturer
2	Nose tow release (applies to sailplanes on which it is installed)	EUROPA E 85	2000 take-offs	to be determined by original equipment manufacturer
3	Tow cables	-	-	2000 ± 100hr or 10000 ± 500 take-offs/ 16yr.
G	<u>CONTROLS</u>			
1	Rudder control cables	-	-	2000 ± 100hr or 10000 ± 500 take-offs/16yr.

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3. Periodical Inspections, Lubrications and Checkings

For the purpose of reliable operation of the sailplane, it is necessary to carry out the periodical inspections, lubrications and checkings mentioned below with regard to the number of take-offs and flying hours. The exact number of the sailplane take-offs flying hours are to be registered. To record these items a sailplane log-book is provided. All periodical inspections and the like are to be recorded in the Sailplane Log-book as well.

3.1. Survey of periodical work

A. Periodical inspections

The periodical inspections consist of inspections A-type and inspections B-type.

Leak test of the static and dynamic pressure system is to be done at time periods not exceeding 24 months.

A-type inspection

This inspection is performed every 50 ± 5 flight hours or every 350 ± 30 take-offs or every year since the start of operation or last periodical inspection, in accordance with the item 3.2.a.

B-type inspection

This inspections is performed every 500 ± 30 flight hours or 3000 ± 180 take offs or after 8 years since the start of operation or last general overhaul , in accordance with the item 3.2.b.

B. General overhaul

General overhaul is performed at intervals mentioned below or after any major damage of the sailplane.

a/ The period for the 1-st and further general overhauls is 1000 flight hours or 16 years or 5000 take-offs since the production of the sailplane or since the previous general overhaul.

C. Service life

a/ The basic service life of the sailplane is 3750 flight hours, provided that the operating conditions, outlined below, are fulfilled:

a.1/ 4.8 take-offs per 1 flight hour

a.2/ the ratio winch launching: aerotow 5:1

a.3/ crew: 35 % two pilots, 65 % solo

a.4/ the ratio elementary training: advanced training and routine flying:
40 % : 60 %, while 0.26 % of total flight hours are aerobatic

a.5/ the flaps are in UP position at every winch launching

b/ Service life may be prolonged on the following assumptions:

b.1/ replacement of critical parts L 13 glider in accordance with the bulletin L 13/050.

Thereby is the life prolonged by 3750 flight hours to the value, which has the sailplane attained till the part replacement, or by more exact value, valid for average operating conditions, which will be supplied to the manufacturer by the user.

b.2/ replacement of critical parts by parts of L 13 A glider in accordance with the bulletin L 13/057. Thereby is life prolonged by 6000 flight hours since the date of critical parts replacement.

b.3/ after evaluation of supplied statistical operating conditions /supposed they are more favourable than listed above/, will the producer determine the conditions concerning the glider life.

b.3.1/ Statistical data, which must be supplied to the manufacturer for life prolongation:

- i - number of take-offs per 1 hour totally
- i₁ - number of winch launches per 1 hour
- k₁ - % of take-offs with two pilots from i₁ take-offs
- k₂ - % of take-offs with flaps extended to 10° from k₁ take-offs
- k₃ - % of take-offs with flaps 0° from k₁ take-offs
- k₄ - % of take-offs solo from i₁ take-offs
- k₅ - % of take-offs with flaps extended to 10° from k₄ take-offs
- k₆ - % of take-offs with flaps 0° from k₄ take-offs
- i₂ - number of aerotow take-offs per 1 flight hour
- k₇ - % of take-offs solo from i₂ take-offs
- k₈ - % of take-offs with two pilots from i₂ take-offs
- k₉ - % of routine flights with two pilots/circuits, thermic flying, cross-country flights, normal training, return aerotows/from total flight hours
- k₁₀ - % of routine flights solo/circuits, thermic flying, cross-country flights, normal training, return aerotows/from total flight hours
- k₁₁ - % of two pilot training flight hours from total flight hours
- k₁₂ - % of solo training flight hours from total flight hours
- k₁₃ - % of flight hours of aerobatic training and aerobatic/training of stalling, slips, spins, narrows curves/ divided on solo and two pilot flights.
- - load spectra/if they are available to the user/

On the basis of above mentioned data, approved by supervising office in user's country, it is possible to calculate more exactly the sailplane service life for average operating conditions of the whole sailplane fleet in respective country, using the load spectra of original calculation.

b.3.2/ On sailplanes with life prolongation it is necessary to extend the B-type inspection by following operation:

Inspect the critical spots on the lower wing flangeplates till the distance of 500 mm from the main wing hinge axis and the whole centre-section spar from fuselage inside, through openings in edge wing ribs and through openings in centresection spar web, for fatigue cracks detection.

3.2. Volume of prescribed work

a/ A-type inspection

Fuselage

The fuselage outside surface must be clean, in good condition, riveted joints must not be loosened; cockpit closure and ventilation must be sound. The locks of the mounting doors must be in order. Locks of back-rests and covers are to be tightened. The upholstery of the padded fabric is to be brushed and fuselage inside space cleaned.

Wing

The wing surface must be clean, not warped, the rivets-especially those at points where covering sheets contact one another - must not be loosened. The covering fabric of ailerons must not be worn out or torn. The hinges of the ailerons, flaps and divebrakes must move easily, too much play, however, is not allowed. The dust from the inside of wings must be exhausted by a vacuum cleaner.