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Reason: Modifications related to conversion of the L13 sailplane to the L13A sailplane.

To be accomplished on the basis of: Supplement No. 1 of the technical report LET 8/4510/78 and the comments of CAI.

Description: The holders of Technical manual of the L13A sailplane will replace original sheets: 0-1, 0-2, 0-3, 0-6, 1-2, 2-3, 2-4, 3-3, 3-5, 3-6, 3-7, 3-8, 3-9, 3-10, 3-12, 3-13, 3-14, 3-15, 3-16, 3-16a, 4-3, 4-25, 6-11, 6-12, 6-13, 6-16, 6-17, 6-21, 6-22, 6-23, 6-24, 6-30, 6-31, 7-6 by changed sheets dated april 30/96 and new sheet 7-7 dated april 30/96 file to relevand place.

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96-10-02

Civil Aviation Inspection

RECORD OF REVISIONS

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1. Introduction

This Technical Manual of the L 13A Sailplane is intended for providing the sailplane operator with the information required to maintain the L 13A sailplane in serviceable condition throughout its service life.

The text of this Manual is based on the assumption that servicing and maintenance of the sailplane will be carried out by skilled ground engineers and more complicated repairs will be caried out by professional repair shops.

Remember that servicing, maintenance or revision of outfit during which is necessary to dismantle the particular aeroplane parts out of sailplane and hand them over to the laboratory (workshop, testing shop, service shop) can be performed only by manufacturers or by workplace having valid licence for this activity.

Information on the sailplane design is provided in the Technical Description of the L 13A Sailplane.

1.1. Revisions

Should there be some changes in the maintenance procedures of which the sailplane operator is to be notified, the operator will receive replacement sheets by means of bulletins. The replacement sheets will be marked with the date of issue in the lower left corner, and the revised text will be marked with a vertical line on the left hand side. If the original text is only shiffed to the following page, this will not be marked. If there is no change in the text (except for its shifting), the replacement sheet will be marked with a new date of issue and the letter "R". Simultaneously with each revision, a new "Record of revisions" is issued which is to be inserted in the Manual after the Title Page and the List of Effective Pages.

2.2. PERIODICAL INSPECTIONS

2.2.1. Principles of sailplane surface maintenance

Maintenance after every 3 months for part. 3.2.2.1

2.2.2. Periodical inspections sailplane

The pericdical inspections consist of inspections: A, B, C, D, - type.

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.

B - type inspection

This inspection is performed every 500 ± 30 flight hours or 3 000 ± 180 take offs after 5 years since the start of operation or last inspection B - type.

C - type inspection

This inspection is performed every 1000 ± 50 flight hours or 5 000 ± 250 take-offs after 10 years since the production of the sailplane or last inspection C-type.

D - type inspection

This inspection performed every 2000± 100 flight hours or 10 000 ± 500 take-offs after 15 years since the production of the sailplane or last inspection D-type.

- The sailplane will be inspection D-type also any major damage.

Extent of work for particular type of maintenance is mentioned in part 3.2.

2.3. SERVICE LIFE

The basic service life of the sailplane is 6,000 flight hours, provided that the operating conditions, outlined below, are fulfilled:

- 4.8 take-offs per 1 flight hour
- the ratio winch launeching: aerotow 5 : 1
- crew: 35% two pilots, 65% solo.
- ratio of elementary training to advanced training and high-performance soaring is 40% : 60%, aerobatics takes 2% of total operational time (from take-off to landing). Contact manufacturer, if ratio for aerobatics is exceeded.
- the L13 sailplanes converted to L13A must be periodically inspected in the following areas because of possible fatigue cracks after every 250 hours of operation:

  a) webs and beams of horizontal tail plane spars between hinges or in the area close to these hinges.

  b) skin of horizontal tail planes

  c) fuselage in the area of landing gear attachment

  d) rear part of fuselage in the area of tail planes

/3/ 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 the connecting pin of the horizontal folding on the bulkhead. No. 15.

/4/ C ontrols

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.

/5/ Landing gear

The undercarriage and surrounding are to be kept clean. Remove dust and sticking mud by washing. Check correct function of the brake and shock absorber. Check the presure 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.

/6/ 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 lye on it. Neutralize and conserve the stained parts surfaces. After having finished the flight, the battery is to be handed over to the charging station for recharging.

3.2.3. CONTENTS OF MAINTENANCE OF A-TYPE

3.2.3.1 Inspections

(1) Fuselage

The fuselage outside surface must be clean, in good condition, riveted joints must be loosened, cockpit closure and ventilation must be sound. The locks of the mounting doors must be in order. The upholstery of the padded fabric is to be brushed and fuselage inside space cleaned.

(a) Accomplish maintenance point 3.2.5.(4), 3.2.5.(5) for L13 sailplanes converted to L13 A when 250+/-25 hours since conversion or inspections B,C,D are reached.

(2) Wing

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

(3) Tail unit

No damage deformation to the covering sheets is allowed. The covering fabric on rudder and elevator must not be loose. The rudder elevator and trimtab motion must be easy, no play, however, beeing allowed. The hinge pins must be secured properly.

The rudder and elevator deflections are to be measured (see Part I of Manual L23 Chapter 1-2). Check whether or not the sailplane is not located in the fuselage with too musch clearance. The permissible clearance of the tail plane location in the fuselage is not more than $\pm$ 2 mm (measured on the extreme outside arch of the tail plane). Greater clearance than allowed may be caused by wear of ball joints in the sailplane hinges of the fuselage (See Fig. 17, item 17). It must be remedied by replacing these ball joints.

(a) Accomplish maintenance points 3.2.4.(5), 3.2.5.(4), 3.2.5.(8) and check the webs and beams between hinges and in the area close to these hinges for L13 sailplanes converted to L13A when 250 +/- 25 hours since conversion or inspections B,C,D are reached.

/4/ Controls

When the controls /control stick and rudder pedals/ are in a normal /i. e. central/ position, then the rudder, elevator and ailerons must be in their undeflected positions, too. No, so called, lost motion of controls must occur /See Part I of Manual L 13 Chapter I-2/. Push rods must be neither bent not otherwise deformed. Fairleads and control cables must not be damaged. The control push-rods of the flaps and divebrakes must not be damaged and must be aesy to move, without of any play, in the guides. The carrier pin on the countershaft in the fuselage must not be jammed and the carrier channel /See Fig. 23, det. B/ must not be open. Damaged parts are to be replaced and the securings of all pins are to be checked.
Check the condition of the bonded junctions on inner push rods draw. No. L 13. 411-12 of flap control /See Fig. 23, item 15/. An eye is bonded to one end of this push-rod whilst a threaded tube for attachment of clevis is bonded to the other end.

How to procede during the check

The check is effected by two men. One of them holds the flap control handle in the "ON" position, whilst the other one holds the flap by its leading and trailing edges /at that point where is the rib/ and by exerting force in the directions of the flap extension and retraction, will check whether the flap control push rods are not loosened (in bonded joints).
The check is carried out on the left as well as on the right flap. If any defect at the bonded joints is ascertained, then it is necessary to replace the defective part and report it to the manufacturer.

/5/ Landing gear

Check the pressure in the tyre air tube. This pressure can be checked by means of the normal pressure gauge with is used for motocars. The tyre air tube pressure should be0.23 MPa /2.6 kg per sq. cm/. Check the spring mounting of the undercarriage shock absorbed. If the shock absorber is pumped properly and the sailplane is loaded fully, the piston rod /tube/ will project to a lenght of 13 ± 3 mm out of the cylinder. /See Fig. 79, dimension figure x/. The check can be effected without removing the leather cover of the piston rod. The measurement is taken after the shock absorber has been depressed several times in order to eliminate the influence of the shock absorber inner friction. For maintenance and defects of the shock absorber - see Cl. 4 of this Chapter. The opration of undercarriage control mechanism is to be tested on an elevated sailplane.
The brake linig must not be oil soaked and worn too much.
The brake lining must not be oil soaked and worn too much.
The undercarriage wheel must not be damaged, its turning must be smooth. No play is allowed. For maintenance of the wheel and brake - see Cl. 5 of this Chapter. The suspension /hinge/ pins and control mechanism pins must not be jammed. The stop on the suspension forging must not be bent.
Inspect the tail skid - to see if it is not damaged. The undercarriage and surrounding area to be cleaned ; worn parts replaced.

(a) Accomplish maintenance point 3.2.5.(2/b/) for L13 sailplanes converted to L13A when 250 +/-25 hours since conversion or inspections B,C,D are reached.

/6/ Outfit

Clean the cushions and upholstery. Inspect the first-aid kit contents and replenish, if necessary. Check the side-wall release hooks control mechanism and the front tow hook. Worn out parts are to be replaced. Once a year check the emergency jettisoning of the cock pit hood. Proceeed in the following way:

- Rotate through180° in the direction marked by the arrow the emergency release lever installed on the right hand side of the cockpit hood towards the front. In the first segment of the travel of the release lever, the resistance due to cutting of the 0.5 mm locking wire fitted with a seal and an aluminium shear pin of 2.0 mm dia is to be evercome.
- Holding the release lever at the end of its travel, force the right hand side of the cockpit hood upwards. To avoid damage of the hood, it is necessary that an assistant should support the hood from right outside before releasing it from the the hinges.
- After removal of the hood inspect all working parts for corrosion. Corrosion, if defected is to be removed with emery paper. In any case remove old grease, clean and lubricate.
- Holding the release leve in its forward position, reassemble the cockpit hood by inserting the pins into the hinges. To end assembly seal tje lever with locking wire and insert new aluminium shear pin.

(7) Instruments and electrical outfit

Disconnect the Pitot and static pressure tubing from the instruments. Blow the tubing out by means of compressed air. After having blown the tubing out, effect the respective connections.

Perform the (tightness) test. Check all units on instrument board and make certain that the glass of each is tight and in good codition and that no other damage has occured to them. Check the turn and bank indicator LUN 1211.1 and if necessary, remove the carbon dust from the collector (see 6-3).

Carry out the compensation of the pilot compass (see 6-4).

3.2.3.2 Lubrication

The sailplane is to be lubricated with an aircraft lubricating grease. Those points, which cannot be lubricated with grease in its normal condidion, shall be lubricated with grease thinned with technical grade petrol. For better orientation, the lubrication points on the sailplane airframe are seen in the lubricating schema (see Fig. 3-1). Dust and rests of previous grease.

on these points are to be removed, prior to applying grease to them. Use technical grade petrol for this cleaning.

Lubrication points in the sailplane /sequence numbers correspond items in Fig. 3-1:

1. Connection of push rods actuating the release hook and countershaft on the bulkhead No. 1.
2. Connection of lever of front hook of towing cable and push-pull rod.
3. Front release hook for towing cable.
4. Connection of push rods and cables with double-arm lever of rudder control at front pedals.
5. Mounting of the lever for adjustment of front pedals in console on the cockpit floor.
6. Connection of front control lever of trimming tabs with connecting push- pull rod.
7. Mounting of the front control stick.
8. Front guides of push rods of flap and divebrake control.
9. Guide of cable release push rod in the rear cockpit.
10. Rear guide of flap and divebrake control push rods.
11. Bearing of rudder pedals pulleys.
12. Connection of rear lever of trim tabs control with connecting push rod and cables.
13. Ball joints of rear control column.
14. Side-wall hooks of towing cable /left and right/.
15. Lock of undercarriage control push rod.
16. Ball joint of undercarriage control push-rods.
17. Connection of undercarriage control push-rod with single-arm lever.
18. Bearings of undercarriage pivoted suspension.
19. 20. Grease cups on undercarriage shock absorber (to be lubricated by means of lubricating gun/.
21. Mounting of wheel fork on fuselage.
22. Connection of wheel brake lever with Bowden cable.
23. Wheel bearings. Lubrication grease in bearings of a correctly functioning wheel, is not allowed to be replaced before the full-range check of sailplane.

24.,25. Mounting of push-rods and fairleads of control of flaps and divebrakes.
26. Bearings of mounting of outer and inner shaft of flap and divebrake control.
27. Lower bearing of control vertical countershaft mounting.
28. Rudder pedals pulley.
29. Connection of control push-rod with vertical countershaft lever.
30. Upper bearing of vertical countershaft mounting and connecting push rods mounting.
31. Bearing on rocker lever of aileron control /on rib No.1/
32. Ball joint of divebrake and flap control.
33., 34. Mounting of inner push rod of flap control.
35. Pulley of guide link of flaps on rib No.1.
36. Bearings on rocker lever of aileron control.
37. Pulleys of slotted link of flaps on rib No. 7.
38. Bearings on rocker lever of aileron control.
39.,40. Mounting of outer push rod flaps control.
41. Bearings on double-arm lever of divebrake control.
42. Divebrake higes.
43. Pulley of slotted link of flaps on rib No. 13.
44. Inner shaft bearing on rib No. 15.
45. Pulleys of slotted link of flap on rib No. 19.
46. Bearings on rocker lever of aileron control.
47. Mounting of push rod of aileron control.
48. Bearing of double-arm lever of elevator control.
49. Mounting of elevator control push rod.
50. Lower hinge of rudder.
51. Upper hinge of rudder.
52. Inner hinges of elevator
53. Trimming tab hinges.
54. Outer hinges of elevator.

Sailplane equipped by tail-wheel /see Fig. 28a manual L 13/

55. Replace grease in wheel bearing.
56. Remove the fork item 2 from the bracket item 4, clean and grease the friction points.

3.2.4. Contents of B-type maintenance

/1/ Perform the maintenance of A-type according to Par. 3.2.3.

/2/ Perform the check of released rivets on the wing ribs Nos. 13, 19, 25 up and down between the spar and trailing edge. If the number of released rivet is higher than 25% of the whole number of rivets in the given area of individual ribs or 4 rivets are released one behind the other, replace them by using rivets of bigger diameter.

/3/ Check the stranded wires of rudder. When broken wire is found /namely in the spot of bend over the pulleys replace the stranded wire.
Check the tensioning of rudder stranded wires
The stranded wires of rudder control must be tightened to the below values :
- older stranded wires that were in operation - 441 + 49 N
- new stranded wire that has not yet been in operation / in case of replacement/ to the value 441+196N /45+20 kp/
- perform the first tensioning to the upper limit of tolerance.

/4/ When a forcible damage to the skin of the lower fuselage part has been detected between the 1st-6th bulkhead, perform the inspection of bulkheads and fuselage structure under the floors.

/5/ Check the bulkhead No. 15 for possible cracks in the spot of mounting of the tail undercarriage suspension. When the cracks are found out at the area of suspension the operation can be allowed with two cracks of max. lenght 10 mm (the ends of crackes should be drilled with Ø 2.1 drill). In case of bigger cracks, replace the bulkhead.

3.2.5. Contents of C-type maintenance

/1/ Perform the maintenance of A-type according to Par.3.2.3 and B-type maintenance according to 3.2.4.

/2/ Check the landing equipment

a) Check the clearance in the landing wheel fork and in its suspension

b) Check, using the lens magnifying 6x, the suspension cabane for cracks. When cracks are detected, have it repaired in special workshop.

c) Dismantle drag damper. Make replacement of double cup packings and other segments if necessary (Ref. Par. 6.1).

d) Check tyres and tubes, in case of damage or wear, replace it with a new one.

e) Adjust brakes (Ref. Par. 6.2).

f) Check state of wheel bearings, make a petrol or tetrachlor cleaning and grease lubracation (Ref.Par. 6.2).

/3/ Check the following parts of control:

- Max. admissible clearance at the ends of foot control pedals is 3 mm.

/6/ Check the hubs of ailerons control on the 1st rib for cracks and release of joints.

/7/ Check the pins of the joint of the stabilizer and fuselage. replace the scuffed pins for new ones.

/8/ Check the hub of the rudden for cracks using the lens with 6 x magnification

/9/ Check the clearance in the elevator attachment. No clearance is allowed between the left and r.h. rudder /in the countershaft/. Remove the prospektive clearance by closing countershaft arms.

/10/ Check the towing equipment

Clean the side towing suspensions, wash them with petrol and lubricate with CIATIM 201 grease. After the check and repair, perform the test of synchronization of release of the locks:

- they must unlock simultaneously
- when retracted, the locking pins must be "burried" under the level of lock
- in normal position the locking pins must 5 mm extend a minimum
- they must automatically and easily return to initial position
- the lever of automatic release may not seize during the travel to the "OFF" position.

Check the rear pull rod whether it is damaged. Replace the damaged pull rod. It can be made according to drawing L13.807-06 (see Par. 8-2).

/11/ Check the control of wing and brake flaps.

a/ Check to see that the surface of pull rods of brake and wing flaps in the fuselage is free from mechanical damages and that pull rods do not seize in their guides on the left side of the fuselage. Replace the faulty guides for new ones. The pull rods must move smothly along the whole length of their travel /provided that the final assembly of the soaring glider has not yet been perfomed/.

b/ Check the connecting tie going from the flap to the front position. In operatin the tie rods are buckling stressed and therefore, check above all their straightness during

revisions. Put out of service the tie rods with evident and permanent deformations or scuffe apertures in forks and replace them for new ones.

c/ Check to see that the control of wing and brake flaps is thoroughly overbridged in all the prescribed spots. Remove prospective shortcommings following the instructions of Par. 5-27.

d/ Check the ball journals with pins and runner-type carriers on the countershaft and their opposite members on the double shaft in the wing. Replace deformed or damaged parts. When doing this it is generally necessary the countershaft be dismounted from the fuselage. It is not recommended to dismount the double shaft from the wing, since its refitting into the wing is connected with big troubles.

e/ After the check and prospective replacement of faulty parts, clean thoroughly all the movable joints and lubricate them with Ciatim 201 grease.

/12/ Elevator and ailerons control
Check the tensioninn of ruder to Par. 4.1.1. punct 22. Dismount the elevator drive, wash it thoroughly in technical petrol and check it for cracks. The drive must be free from from rough mechanical damages. Prospective solitary cracks can be repaired by drilling their ends with ø 2.1 mm drill. When the drive is damaged or severely cracked, replace it for new one.

/13/ Check the tightness of static and dynamic pressure in systems accordance with Par. 4.1.1. punct 8.

/14/ Check to see that the bundle of conductors, when passing the bulkheads Nos. 2 and 3, is protected by rubber bushing. If need be, complete or replace the bushing.

/15/ Check the bundle of conductors at the spot of passage throug the 5th bulkhead /cut out for rectangle/ to see that it is protected with plastic leather and, if need be, repair it.

/16/ Dismantle the board instruments and check them in laboratory in accordance with Technical Conditions or according to Chapter 6 of this Manual. Record the test and possible repairs to the Certificates of the instruments.

3.2.6. Contens of D-type maintenace

/1/ Perform the A-type maintenance by Par.3.2.3, B-type by 3.2.4 and C-type by Par. 3.2.5

/2/ Measure gradually the holes and pins in the suspensions: wing-fuselage and in the suspension of tail surfaces.
For the glider to be released into further operation the dimensions of pins and holes must comply with the below table, column "0". If the dimensions are not satisfactory, repair the suspensions by reaming them to dimensions specified in the table, columns I and II or, at maximum, in columns III.
Placed, however, into the reamed holes must be new pins that correspond with the selected repair I, II, III. **Mark the pins on their heads.**

/3/ Check the critical spots on the lower flange plate of wing up to the distance 500 mm from the suspension axis and the whole flange plate of the centre section from the structure inner part. The inspection is performed through the apertures in the end ribs of the wing and through holes in the centre--section web /6th partition/
During the inspection, check to see that fatigue cracks are not present.
The fatigue cracks are inadmissible.

	"0"	I	II	III
Front pin of wing	Ø12-0.016 -0.034	Ø12.1-0.016 -0.034	Ø12.2-0.016 - 0.034	Ø12.3-0.016 -0.034
Hole of the front suspension of wing	Ø12+0.027 -0.00	Ø12.1+0.027 -0.00	Ø12.2-0.027 -0.00	Ø12.3+0.027 -0.00
Main pin of wing average-upper lower	Ø22 } -0.020 Ø20 } -0.033	Ø22.1 } -0.020 Ø20.1 } -0.033	Ø22.2 } -0.020 Ø20.2 } -0.033	Ø22.3 } -0.020 Ø20.3 } -0.033
Hole of the suspension of wing, upper, lower	Ø22 +0.033 Ø20-0.00	Ø22.1 +0.033 Ø20.1 -0.00	Ø22.2 +0.033 Ø20.2 -0.00	Ø22.3 +0.033 Ø20.3 -0.00
Joining pin of horizontal tail surfaces	Ø10-0.005 -0.014	Ø10.1-0.006 -0.017	Ø10.2-0.006 -0.017	Ø10.3-0.006 -0.017
Hole for the joining pin of horiz.tail surfaces	Ø10+0.015 -0.00	Ø10.1+0.018 -0.00	Ø10.2+0.018 -0.00	Ø10.3+0.018 -0.00

/6/ Vertical speed indicators must be set to zero. The permissible error of the rough indicator is 1 m per sec., that of the fine indicator being 0,5 m per sec.

/7/ The instrument panels must be freely suspended on rubber blocks /shock-absorbers/.

/8/ The piping of the air-speed meter and vertical speed indicator must be checked for tightness. A reference air-speed meter in connected to the piping system for this purpose and the testing proceeds as follows:

a) a pressure corresponding to an air-speed of 390 km p. h., as indicated by the reference air-speed-meter, is produced in the dynamic pressure system and the rubber tubing is pinched in a suitable place. No decrease in pressure must be observed after 5 minutes.

b) a underpressure corresponding to an air-speed of 390 km p. h., as indicated by the reference air-speed meter, is produced in the static pressure system. The rubber piping is pinched and the underpressure decrease is followed on the reference air-speed meter. Its value must not exceed 10 km p. h. for a period of 2 min.

NOTE: Vertical speed indicators are tested in flight.

/9/ The undercarriage must be adjusted in such a way that in theRETRACTED position, the undercarriage stops bear on the upper stops of the welded support. The securing pin on the governing rod must be in the recess near cross frame No. 2. In the position LOWERED, the stop screws on the welded support must bear upon thebrackets of the undercarriage shock-absorbers. The strut must be cranked. The securing pin on the governing rod must be in the recess of the central guide.

/10/ The levers actuating the brakes in the front and rear section of the cockpit must, when released, easily return to their initial position.

Text for Fig. 4-4:

/1/ Altimeter LUN 1124-01 ; /2/ Air-speed recorder LUN 1106-8; /3/ Aircraft compass LUN 1222.1; /4/ Variometer ± 5 m/s LUN 1141; /5/ Variometer ± 30 m/s LUN 1147; /6/ Blinder; /7/ Turn indicator LUN 1211.1; /8/ Blinding cap /for prospective use of AVRM clock/.

With the instrument panels in position, the electric instruments and switches are connected to supply sources in accordance with wiring diagram in Fig. 15. Accumulator battery is installed into the space behind the rear pilot's seat. Finally the diaphragm instruments /altimeter, air-speed meter and vertical speed indicators/ are connected to the static and dynamic pressure piping. Hoses slipped on to the instrument pressure connectors are secured in position by 4 to 5 turns of galvanized binding wire, dia. 1-0.8 mm.
The first-aid box fastened on the right-hand wall of the fuselage /between 5th and 6th frames/. Both seats and their back-rests are next installed. All joints fastening the seats must be properly locked. Self-tapping screws are used to fasten the upholstery on both sides of the cockpit. See also Chapter II. 9.
The assembly is finished by installing and attaching the cockpit ventilation bar and the front tow-line pull rod. Finally, the cockpit enclosure is put into position and the middle suspension pin of the enclosure is locked against slipping out by means of wire.
The dismantling is performed in the reversed way. Hose ends of static and total pressure lines have to be blinded with appropriate blinder (plug) after disconnecting membrane instruments until the instruments are installed back.

In line with paragraph 3.2 PERIODICAL MAINTENENCE check the soiling of the collector with carbon dust, the dust should be removed as indicated in Par. 6.3.1. If the regulation function is not correct /slow rotation of the gyroscope/, remove with care the regulation lid and clean both couples of contacts with very fine abrasive cloth.

NOTE ! DO NOT DEFORM THE REGULATOR SPRING SINCE THE REGULATION HAS BEEN CALIBRATED WITH GREAT ACCURACY !

6.4. LUN 1222.1. LIQUID-TYPE PILOT COMPASS

6.4.1. Testing

During operation test the instrument for accuracy, seizing /a defect caused by friction/ and for the sticking of the compass rose at the inclination of 20^{o}. Remove compensation equipement and put compass on a magnetic swivel-plate. Rotate swivel plate by 30^{o} and following slight tapping on the compass case read deflection, it should not exceed the value of 1.5^{o}. The dragging or sticking caused by friction in the bearing should be tested by declining the compass rose by 10^{o}, gradually to both sides. The declining is realized with the help of a weak magnet. After removing the magnet the compass rose should return to its original position, with an error not exceeding the value of 1.5^{o}. During this test eliminate any vibrations that might affect the compass. Testing the sticking of the compass rose at inclination of 20^{o} is realized by declining the compass by 10^{o} to the left or to the right and on rotating the compass rose at 360^{o} it should not stick.

6.4.2. Compensating the compass LUN 1222.1.

The compass must be compensated after installation on the sailplane. The compensation can be also performed periodically - see para 3.2. and before performing longer flights.
Compensating must be performed ot the place determined and appropriate to it. The best method of compensation is to use the so-called compensating circle (platform) which enables accurate

rotating of the sailplane in required headings. If no compensating circle is available, the sailplane can be rotated by hand. Correct setting of the sailplane to the required heading is effected by means of a special device, a so-called measuring desk which be aligned with the fore-and-aft axis of the sailplane and fixed.

The measuring desk consists of a circular scale marked in 1 deg. graduations from zero to 360 degrees, magnetic needle pointing to magnetic North and a sight vane, by means of which the desk shall be oriented to a fixed landmark /e. g. factory chimney/. From the fixed orientation point, the required headings shall be set by a circular scale.

Compensation should never be attempted at a point close to any steel structure or any other steel objects closer than 100 - 200 m. Workmen making the compensation are not allowed to have any magnetic object about themselves /pocket knives, keys, etc./ Electrical instruments which will be used during the flight, should be "on" when making compensation.

The actual compensation is effected by turning the compensator screws, marked "B" and "C" by means of a nonmagnetic screwdriver. Location of these slot-headed screws in compass LUN 1222.1 may be seen from Fig. 9.6.

6.4.3. PROCEDURE FOR COMPENSATING THE COMPASS

a) Compass compensating may be performed only by authorized person. First turn the sailplane to a heading "North" and afterwards to "East". Note the deviations on these headings, without making compensation for the time being. Then rotate the sailplane in succession to the headings "South" and "West". Note the deviations on these headings, reducing them to value calculated from both deviations in opposite headings, by the following formula:

For southerly heading: $\frac{dN + dS}{2}$

For westerly heading: $\frac{dE + dW}{2}$

dN ..... deviation in norterly heading
dS ..... deviation in southerly heading
dE ..... deviation in easterly heading
dW ..... deviation in westerly heading

The N-S compensation shall be made with the screw marked "C"
the E-W compensation shall be made with the screw marked "B"

Finally turn the sailplane to each 30 deg. heading,noting the deviations on the separate headings. The values of the deviation errors are to be tabulated in a card.

b) The results of compensation are recorded into the Compensation protocol.
The following data must be given in the protocol:
- type and S/N of sailplane
- type and S/N of compass
- residual deviation in headings 30°, 60°,90°....360°.
- signature and date

The charts are drawn up on the basis records in this Protocol after finishing of the compensation, which are situated at defined places in the sailplane.

6.6. LUN 1124.01 ALTIMETER

6.6.1. Testing

The aptness of the instrument for operation can be found out through visual examination, by examining the tightness of the casing and checking the accuracy of indicating the altimeter. On checking the air tightness attach to the outlet of the instrument a hose from the vacuum source and underpressure corresponding to the altitude of 6000 m will arise inside the instrument. After reaching this underpressure press /bend/ the hose close to the outlet and watch the dropping of the pointer, it must not exceed 100 m per minute.

The check up defects in the indication of altitudes is realized in the underpressure chamber or under a bell. The correctness of the indication is compared with a control mercury barometer attached to the underpressure chamber through a ruber hose. The pressure in the chamber is checked according to the altitude scale of the mercury barometer. If the mercury barometer lacks the altitude scale, the respective altitudes should be set according to the international standard atmosphere following temperature adjustment on the pressure scale. Prior to puttung the instrument into an underpressure chamber the instrument should be set for the correct atmospheric pressure. The correct pressure is set by setting the pointer on "0" with the knob, then release gear lid and pull out axis and knob by about 3 mm, leaving engaged only the pressure scale, which in turn is set for the pressure read on the mercury barometer by turning the knob, the pressure is then subjected to heat correction according to the table of corrections of the mercury colum. After adjusting the pressure the axis and knob should be pulled into place, tighten the lid and by turning the knob set pressure scale for a pressure corresponding to zero altitude according to the standard atmosphere, i. e. to 1013.25 mb /760 mm Hg/. During check up in the underpressure chamber a vibration of 0.1 to 0.3 should act upon the instrument. The reading of the mercury barometer should be indicated according to the summit of the meniscus. The altitudes are checked in the direction up and down. If the instrument fails to cope with some of the testing conditions, it should be put out of operation or should be repaired.

PERMITTED DEVIATIONS:

Checked values on the dial (in metres)	Admissible errors in metres at 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	- 180 + 120

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R E C O R D S

on test flying of an L 13 glider, marker's ident. No. : .....

Immatricul.mark: ..... realized on the day of: .....

on the airport of: .....

Place and year of manufacture: Let, n. p. Kunovice .....

Weight of the empty aircraft with full outfit: ..... kg

Max. starting weight: ..... 500 ..... kg

Performance of the aircraft during test flight:

1. Behaviour of the glider during start: ..... normal .....
2. Adjustment of the glider during glide flight ..... normal .....
3. Behaviour of the glidet at max. speed ..... normal .....
4. Behaviour of the aircraft at minim. speed ..... normal .....
5. Behaviour at sharp turn to the left ..... normal .....
6. Behaviour at sharp turn to the right ..... normal .....
7. Behaviour of the glider at stalling in landing config in gliding flight from an altitude of 1000 m SOL ..... normal .....
8. Possibility of ending the spin at 750 m SOL ..... normal .....
9. Descent with gliding flight combined with L+R glissade, glaps 0 ..... normal .....
10. Behaviour of the glider during landing: ..... normal .....

Besides standard outfit the aircraft is fitted with the following extra instruments and accessories:

a/

b/

Faults found out during the test flight:

As far flying properties are concerned the sailplane is perfectly apt for further use.
The test flying was realized by:

....
Name Signature