JSC "Sportinė Aviacija"
Generalinis Direktorius
Generaal Director
Z. Vegelevičius
18 03 2008

Service Bulletin No. 019T.8.00.004A

Issue of a new Revision No. 1 of the Flight and Maintenance Manuals for the Self – Sustaining Sailplane LAK-19T

JSC "Sportinė aviacija"
Design Director
K. Juočas
18 03 2008

JSC "Sportinė aviacija"
Service Engineer
K. Gečas
18 03 2008

JSC "Sportinė aviacija"
Engineer-constructor
M. Andrikaitis
18 03 2008

2008

Record of revisions

Revision No.	Date	Affected pages	Revised Section No.

Subject: (a) issue of the new LAK-19T Maintenance Manual, Revision No.1.
(b) issue of the new LAK-19T Flight Manual, Revision No.1.

The copies of the service bulletin No.019T.8.00.004A are sent to:

1. Civil Aviation Administration of the Lithuanian Republic (CAA) – 1 copy;
2. EASA RP for LAK-19T, LBA, Germany - 1 copy;
3. Aviation authorities of countries, which issued Type Certificates for the LAK-19T - 1 copy;
4. For the known owners of LAK-19T or administration of organizations (clubs) having LAK-19T self-sustaining sailplanes – 1 copy.

2. Affected:

Type: LAK-19T

Manufacture: AB "Sportinė Aviacija", Pociūnai, LT-4340 Prienai, Lithuania.

Serial numbers affected: all serial numbers.

Original type certificate: EASA Type Certificate A.012 2004.10.16

3. Reason (a) grammar changes in a text of the manual
(b) supplementary information in a text of the manual

4. Time of compliance: this service bulletin must be accomplished immediately after receiving it.

5. Actions

5.1 Replace in existing Sailplane Flight Manual with LAK-19 Sailplane Flight Manual Revision No 1:

1. Record of revisions – page i;
2. Page 7-4.

5.2 Replace in existing Sailplane Maintenance Manual with LAK-19T Sailplane Maintenance Manual Revision No 1:

1. Record of revisions – 1 page;
2. List of Effective pages – 2 pages;
3. Pages:2/5, 2/7, 2/8, 2/18, 2/44a, 3/6, 3/9, 3/10, 3/11, 3/13, 3/14, 3/23, 3/27, 5/3, 7/4, 8/2.

6. Mass and balance

The described actions do not affect C.G of the glider.

7. Documentation and materials

New pages for “Maintenance Manual for the Self-Sustaining Sailplane LAK-19T” has to be ordered directly from the manufacturer - AB “Sportinė Aviacija”, Pociūnai, LT-4340 Prienai, Lithuania.

8. Accomplishment and log entry

The owner/operator of the glider can carry out the actions described in this Service Bulletin. The compliance of this service bulletin must be checked and entered in the glider’s logbook following the operator’s national regulations.

Supplement: 19 pages according item 5.1 of this service bulletin No 019T.8.00.004A

List of Effective pages

Section	Page	Date of issue	Section	Page	Date of issue
1	1/1	01 March 2006		2/41	01 March 2006
	1/2	01 March 2006		2/42	01 March 2006
	1/3	01 March 2006		2/43	01 March 2006
	1/4	01 March 2006		2/44	01 March 2006
2	2/1	01 March 2006		2/44a	30 January 2008
	2/2	01 March 2006		2/45	01 March 2006
	2/3	01 March 2006		2/46	01 March 2006
	2/4	01 March 2006		2/47	01 March 2006
	2/5	30 January 2008		2/48	01 March 2006
	2/6	01 March 2006		2/49	01 March 2006
	2/7	30 January 2008		2/50	01 March 2006
	2/8	30 January 2008		2/51	01 March 2006
	2/9	01 March 2006		2/52	01 March 2006
	2/10	01 March 2006		2/53	01 March 2006
	2/11	01 March 2006		2/54	01 March 2006
	2/12	01 March 2006		2/55	01 March 2006
	2/13	01 March 2006		2/56	01 March 2006
	2/14	01 March 2006		2/57	01 March 2006
	2/15	01 March 2006		2/58	01 March 2006
	2/16	01 March 2006		2/59	01 March 2006
	2/17	01 March 2006		2/60	01 March 2006
	2/18	30 January 2008		2/61	01 March 2006
	2/19	01 March 2006		2/62	01 March 2006
	2/20	01 March 2006		2/63	01 March 2006
	2/21	01 March 2006		2/64	01 March 2006
	2/22	01 March 2006		2/65	01 March 2006
	2/23	01 March 2006		2/66	01 March 2006
	2/24	01 March 2006		2/67	01 March 2006
	2/25	01 March 2006		2/68	01 March 2006
	2/26	01 March 2006		2/69	01 March 2006
	2/27	01 March 2006		2/70	01 March 2006
	2/28	01 March 2006		2/71	01 March 2006
	2/29	01 March 2006		2/72	01 March 2006
	2/30	01 March 2006		2/73	01 March 2006
	2/31	01 March 2006		2/74	01 March 2006
	2/32	01 March 2006		2/75	01 March 2006
	2/33	01 March 2006		2/76	01 March 2006
	2/34	01 March 2006	3	3/1	01 March 2006
	2/35	01 March 2006		3/2	01 March 2006
	2/36	01 March 2006		3/3	01 March 2006
	2/37	01 March 2006		3/4	01 March 2006
	2/38	01 March 2006		3/5	01 March 2006
	2/39	01 March 2006		3/6	30 January 2008
	2/40	01 March 2006		3/7	01 March 2006

]

Section	Page	Date of issue	Section	Page	Date of issue
	3/8	01 March 2006		7/13	01 March 2006
	3/9	30 January 2008		7/14	01 March 2006
	3/10	30 January 2008		7/15	01 March 2006
	3/11	30 January 2008		7/16	01 March 2006
	3/12	01 March 2006		7/17	01 March 2006
	3/13	30 January 2008		7/18	01 March 2006
	3/14	30 January 2008		7/19	01 March 2006
	3/15	01 March 2006		7/20	01 March 2006
	3/16	01 March 2006	8	8/1	01 March 2006
	3/17	01 March 2006		8/2	30 January 2008
	3/18	01 March 2006		8/3	01 March 2006
	3/19	01 March 2006		8/4	01 March 2006
	3/20	01 March 2006		8/5	01 March 2006
	3/21	01 March 2006		8/6	01 March 2006
	3/22	01 March 2006		8/7	01 March 2006
	3/23	30 January 2008	9	9/1	01 March 2006
	3/24	01 March 2006			
	3/25	01 March 2006			
	3/26	01 March 2006			
	3/27	30 January 2008			
	3/28	01 March 2006			
	3/29	01 March 2006			
	3/30	01 March 2006			
	3/31	01 March 2006			
	3/32	01 March 2006			
4	4/1	01 March 2006			
5	5/1	01 March 2006			
	5/2	01 March 2006			
	5/3	30 January 2008			
	5/4	01 March 2006			
	5/5	01 March 2006			
	5/6	01 March 2006			
	5/7	01 March 2006			
	5/8	01 March 2006			
	5/9	01 March 2006			
6	6/1	01 March 2006			
7	7/1	01 March 2006			
	7/2	01 March 2006			
	7/3	01 March 2006			
	7/4	30 January 2008			
	7/5	01 March 2006			
	7/6	01 March 2006			
	7/7	01 March 2006			
	7/8	01 March 2006			
	7/9	01 March 2006			
	7/10	01 March 2006			
	7/11	01 March 2006			
	7/12	01 March 2006			

Record of revisions

Any revision of the present Manual, except actual weighing data, must be recorded in the following table and in case of approved Sections endorsed by responsible airworthiness authority.

The new or amended text in the revised page will be indicated by black vertical line in the left hand margin, and the Revision No. and date will be shown on the bottom left hand of the page.

Rev. No.	Affected Section	Affected Pages	Date of issue	Approval	Date of approval	Date of Insertion	Signature
Rev.1	0	i	30 01 2008				
Rev.1		ii	30 01 2008				
Rev.1	2	2/5	30 01 2008				
Rev.1		2/7	30 01 2008				
Rev.1		2/8	30 01 2008				
Rev.1		2/18	30 01 2008				
Rev.1		2/44a	30 01 2008				
Rev.1	3	3/6	30 01 2008				
Rev.1		3/9	30 01 2008				
Rev.1		3/10	30 01 2008				
Rev.1		3/11	30 01 2008				
Rev.1		3/13	30 01 2008				
Rev.1		3/14	30 01 2008				
Rev.1		3/23	30 01 2008				
Rev.1		3/27	30 01 2008				
Rev.1	5	5/3	30 01 2008				
Rev.1	7	7/4	30 01 2008				
Rev.1	8	8/2	30 01 2008				

2.2.4 Horizontal tail

The horizontal tail (fig. 2-4) consists of a stabilizer (pos. 1) and an elevator (pos. 2 and pos. 3).

The stabilizer is made of composite materials and construction of its shell is similar to wings shell construction.

The elevator consists of two parts: left (pos. 3) and right (pos. 2). Control surfaces are partially balanced and made of composite materials. Each part of the elevator is fastened to the stabilizer with 3 pins.

The horizontal tail is attached onto the upper fin part (fig. 3-3a).

The elevator is joined to control system automatically.

2.2.5 Landing gear

The landing gear consists of a retractable main wheel (fig. 2-2a, pos. 5) and fixed tail wheel (fig. 2-2a, pos. 6).

Landing gear main wheel type TOST 055191 with Clevelend disk brake of hydraulic type, connected to air brakes control system, is attached to metal girder (fig. 2-2b, pos. 4) with the help of stands (fig. 2-11, pos. 6, pos. 7) and a shock absorber (fig. 2-11, pos. 8). The opening for the wheel is covered with a main wheel box (fig. 2-11, pos. 9). It protects the fuselage internal space from dust and dirt.

Mechanical wheel brake system is optional.

With main wheel up the landing gear door (fig. 2-21, pos. 2) is closed.

Tail wheel (fig. 3-12) 6x1 1/4" (or 200x50) of size is attached to fuselage shell with help of an axle (pos. 4), bolt (pos. 3) and washer (pos. 1).

2.3. Control systems

2.3.1 Ailerons and control system

In order to ensure required rigidity and to reduce unsteadiness, ailerons contro system is made of metal rods and levers (fig. 2-5a and 2-5b).

Movement from the control stick (pos. 1 fig. 2-5a) by rods and intermediate levers (pos. 2, pos.3) is transmitted to a shaft (pos. 4) which in its turn with help of automatic connection transmits the movement to the shaft (fig. 2-5b pos. 5) in the wing. The lever (pos. 6) turns rotational movement into sliding one and by help of rods and levers (pos. 7) the aileron is deflected in required direction.

In order to ensure rigidity the central rod in wing is supported by ball guides (pos. 8).

Ailerons deflection angles are : $-21 \pm 2°$

$+18 \pm 2°$

2.3.2 An elevator control system

The elevator control system (fig. 2-6) consists of metal rods and bellcranks. In order to ensure rigidity the main rod in the fuselage is supported by guide rollers (pos. 5).

handle by an intermediate lever (pos. 2) is transmitted to the shaft (pos. 3) which in its turn transmits movement by help of automatic connection to the shaft (fig.2-12b pos. 12) in wing.

The lever (pos. 13) converts rotational movement to sliding one and by help of intermediate levers transmits it to lifting mechanism, consisting of the bellcrank 2 (pos. 14) and arm's (pos. 15, pos.16). Brakes in closed position are fixed by cinematic lock which protects against spontaneous opening of brakes. The lock turning-point is regulated by bolt of fixer (pos. 17).

Control system of air brakes is connected with control system of landing gear brake. Landing gear brake operates just in the end part of movement of air brake handle.

2.3.6 Water ballast control system

The glider is equipped with wing tanks 180 liter of capacity and fin tank 8 liter of capacity. There are three possible configurations of water ballast system. (1) The standard configuration is when both wing and tail ballast tanks are installed and both are operated with one handle simultaneously (fig. 2-9a and fig. 2-9b). (2) The optional configuration when wing and fin water ballast valves open independently can be installed (fig. 2-9e). If the sailplane has an independent (optional) control system for the fin tank valve - the water ballast valve control knob of the fin tank is located on the right side of the cockpit wall. (3) The optional configuration with no fin tank can be installed (fig. 2-9d).

In general water ballast system operates as follows: by pulling the handle (pos. 1) on the right side of the pilot cockpit backward movement by help of the rod (pos.2) is transmitted to the cross rod (pos. 3). The cross rod (pos. 3) rotating by help of the coupling (pos. 4), the shaft (pos. 5), the coupling (pos.6) and the bellcrank (pos. 7) opens valves (pos. 8) in the left and right wings water ballast tanks (pos. 10). The valves (pos. 8) have rubber sealing (pos. 9). When the handle (pos. 1) is returned to initial position valves (pos. 8) are being closed. The shaft (pos. 5) is fastened in supports (pos. 16 and pos. 17) which keep it from moving in axial directions. The shaft (pos. 5) connection with the support (pos. 17) is hermetized with a rubber pipe.

Water ballast is poured into wing tanks through valves (pos. 8) by help of special equipment.

Water ballast is poured into a fin tank through an opening (pos. 12) and a pouring pipe (pos. 13).

Water is poured out from the fin tank after a valve (pos. 25) is open (fig. 2-9c).

The wing and fin water ballast tanks have drainage systems and openings for drainage (pos. 19 and pos. 20).

Warning: Before filling up the water tanks check that the drainage openings are not stopped up.

2.3.7 Tow Release control system

A towing hook (fig. 2-10, pos. 6) is arranged in central part of fuselage at the main frame and (or) in pilot cockpit at the bulkhead. If mounted, both towing hooks are operated is with one handle.

Movement from the control handle (pos. 1) on the left side of a cockpit by steel cable (pos. 2) is transmitted to the shoulder (pos. 5) which opens the hook. The cable looseness is eliminated by an adjustment junction, which comprises the junction (pos. 3) and fixing nut (pos. 4).

2.3.8 Main landing gear control system

The landing gear control system (fig. 2-11) controls retracting and releasing of the main wheel. It consists of a control rod (pos. 1) on the right side of cockpit, an intermediate rod (pos. 2) and a bellcrank (pos. 3). A gas spring (pos. 4) makes it easier to retract the wheel. The control handle in the

retracted and released positions is fixed in the slots of plate (pos. 5).

2.3.9 Landing gear brake control system

Landing gear brake is of hydraulic type, connected to air brakes control system (fig. 2-12a) and it is controlled with help of air brakes handle (pos.1). Movement from the handle is transmitted to the lever (pos. 5) just in the end part of handle movement due to cutout in the tip (pos. 10) of the rod (pos.4). The lever (pos. 5) while turning presses onto piston of cylinder (pos. 6) and causes pressure in the system. Liquid within hose (pos. 9) under pressure flows into brake cylinder (pos. 7) which, in its turn, being under pressure causes braking of wheel disk of gear.

Hydroliquid is poured into reservoir (pos. 8) and by hoses (pos.9) flows into aggregates of hydrosystem.

The mechanical wheel brake system is optional (Fig. 2-12). The main wheel brake is controlled by a handle (fig. 2-12, pos. 1) arranged on the control stick. Movement from the handle to the brake shoulder (pos. 5) is transmitted by the steel cable (pos.2). In order to eliminate loosening of the cable the adjustment junction is mounted on the cockpit floor under the pilot seat. The junction consists of cable support (pos. 3) and fixing nut (pos. 4).

2.4 Equipment and systems

2.4.1 Pitot and static system

Pitot and static system of the sailplane is shown in fig. 2-13. The system consists of:

1. Static pressure receiving ports (pos. 9) which are located at a two sections on a fuselage skin from the inside (distances from sailplane nose to the ports is given at fig. 2-13). Static pressure receivers consists of a glass fiber tanks with air inlet as a holes drilled through the fuselage skin.

There is static pressure lines are S1 and S2. The air gets from three receivers located on the fuselage skin every 120°.

Warning: During a sailplane preflight inspection the holes of static pressure receiver on the fuselage sides shall be checked for cleanliness.

2. Pitot (pos. 10) is a steel pipe mounted in the fuselage nose and right against the air flow. This line is marked by the letter D.

3. Compensated pressure receiver (pos. 11) is a special Nix pipe mounted in fin. This line is marked by the letter N.

4. Flexible polyvinylchloride pipes of different colors transmit air pressure from receivers to corresponding measuring instruments on the sailplane instrument panel. Each separate pressure line has pipes of different colors :

- red – for total pressure line (D),
- yellow – for static pressure lines (S1 and S2),
- green – for compensated pressure line (N).

2.5.6 Power-plant bay door

Power-plant bay door and their actuating system is shown at a Fig.2-26a; 2-26b; 2-26c. Door consist of two main doors and two small forward doors. Door is actuated by the electrical spindle mechanism p.19 which is controlled by MCU. Spindle mechanism has internal limit switches which should be adjusted so that spindle mechanism is switched off when door is closed or open. Electric spindle mechanism actuates system of pushrods and levers which open and closes the door.

The push-rods p.2 has springs inside for allowing some tensioning in a system and so guarantying proper closing of the door with pretension.

2.5.7 Engine support cable

Construction of engine support cable is given at Fig.2-27. One end of the engine support cable p.3 is attached to the engine. The other end in extended position is bottoming at the cable guiding sleeve p.1. When engine is retracted cable is pulled in to the fuselage by rubber bungee p.8 which is pretension and guided by the guide p.2. Guide is hang on a mount p.4 at the rear and fixed with the bolt p.7.

2.6 Placards and marking of controls

Each cockpit control (with exception of the primary flight controls) is marked (fig. 2-19a, 2-19b, 2-19c, 2-19d, 2-19e, 2-19f) according to their purpose and operation mode.

A tables of limitations are shown in fig. 2-19c, 2-19d, 2-19e, 2-19f.

Layout of placards inside the sailplane is shown in fig. 2-19a.

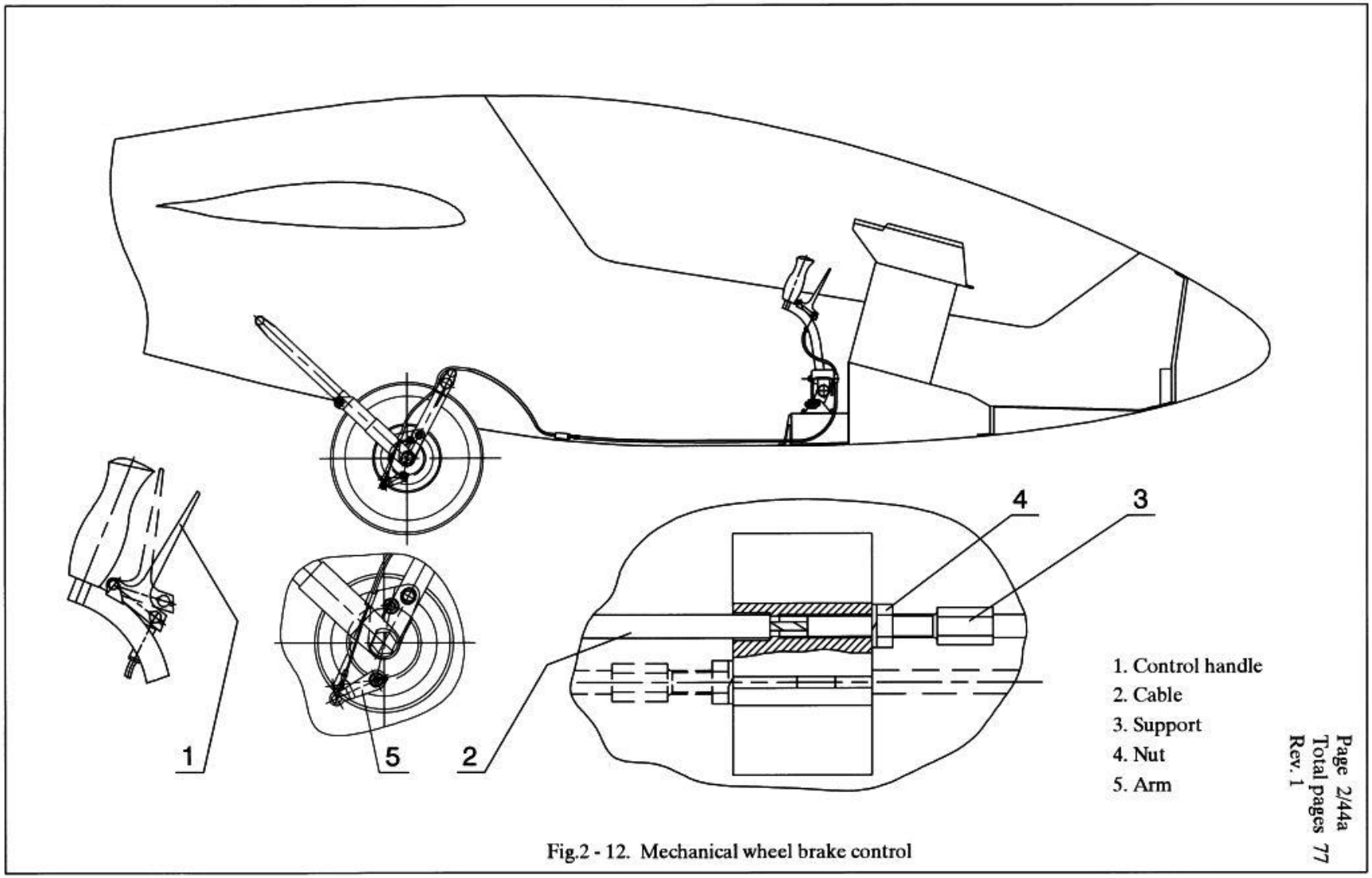


Fig.2 - 12. Mechanical wheel brake control

screw it into thread of hub (pos.5) fully with a 13 mm hexagonal wrench. Connecting the stabilizer the fixator (pos. 7) locks the connection bolt automatically.

Note: After the sailplane rigging is finished check the operation of control systems of the elevator, ailerons, airbrakes and water ballast. Also check the wings for looseness with respect to fuselage in plane of wing chords (forward – backward). If there is looseness wing shall be separated from fuselage and hubs in wing root ribs (fig. 3-2a, pos. 3) shall be adjusted.

4. All the main de-rigging procedures of the sailplane shall be done in the opposite order.

Warning: Before unscrewing the connection bolt of the stabilizer unlock the bolt (fig. 3-3b, pos.7).

3.2 Lubrication system

Lubricants:

(a) Grease - the greases we recommend are lithium based pressure-resistant anti-corrosion greases like AeroShell Grease 33 or lithium-soap greases (multi-purpose greases for rolling element bearings).
The same greases can be used for long time preservation of the components.

(b) Oil - if needed, it is recommended to use oils conforming to the SAE 5W-40 requirements.

Do the lubrication as shown at the scheme fig. 3-4 annually as apart of inspection at the end of flight season:

1. Control stick joint.
2. Rudder pedals joint.
3. The canopy opening and emergency jettison system.
4. Shafts of ailerons and airbrakes and hinges of rods.
5. Levers and hinges of airbrakes.
6. The wing water ballast tank valve and sealing.
7. Hinges of ailerons and connection joint of lever.
8. Hinges of ailerons of wing tips.
9. Hinges of elevator and connection joint of lever.
10. Hinges of rudder and connection joint of lever.
11. Towing hook.
12. Main landing gear.
13. Tail wheel.
14. De-compressor, propeller brake mechanisms.
15. Hinged connections of the power-plant extension/retraction system.
16. Power-plant door hinges and actuating system hinged connections.

When re-lubricating, clean old oil or grease before applying new.

3.3 Adjustment

3.3.1 Adjustment of airbrakes

If airbrakes (fig. 3-5, pos. 1) extension occurs unexpectedly in flight it is necessary to tighten the springs of the lids (pos. 2) by help of nuts (pos. 3). Check the springs proper tightening by lifting the lid upward. The lid has to lift up with force not less than 13.5 kg.

2. Connect aileron control rod:
   - set the rod into control bracket,
   - fit intermediate hubs (pos. 2),
   - push through the new rivet and rivet it (pos. 1).

Note: Riveting shall be done according to repair technology current acceptable practices using rivet ordered from the manufacture.

3.4.2 De-rigging and rigging of a rudder (fig. 3-9a, fig. 3-9b)

Note: Full disconnection of rudder from fin is possible just after peeling off tightening tapes (pos. 4, pos. 5, pos. 6).

A rudder is removed in such order:
- peel off tightening tapes (pos. 4, pos. 5),
- remove a pin from a rudder control rod,
- turn a rudder sideways, peel off plastic tape (pos. 6) from the rudder nose,
- remove wire split pins from three hinge pins of the rudder (pos. 7) and discard. While removing hinge pins keep previous rudder axis,
- remove the rudder hinge pins.
- remove the rudder.

Assembling of a rudder shall be done in the opposite order.

Note: Before sticking plastic tape (pos. 6) on again, surfaces to be taped shall be cleaned of old glue remainders. Use glue of 88 H type.

3.4.3 De-rigging and rigging of an elevator

1. Operations used for de-rigging of an elevator (fig. 3-10):
   - take away wire split pins (pos. 3) and discard,
   - take away washers(pos. 2),
   - pull out hinge pins (pos. 1).
2. Operations used for rigging of an elevator:
   - fit the elevator into the hinge brackets,
   - push through the hinge pins (pos. 1),
   - put on washers (pos. 2),
   - lock the hinge pins with wire split pins (pos. 3).

3.4.4 De-rigging and rigging of a trimmer

It is possible to de-rig and rig a trimmer (Fig.2-7) through the inspection hatches (pos 8, pos.9). Disconnecting of springs is done when they are squeezed together as much a possible.

Other trimmer parts are not supposed to be de-rigged.

3.4.5 De-rigging and rigging of a cockpit canopy

1. De-rigging of the cockpit canopy (fig. 2-18a, fig. 2-18b):

- release the cockpit canopy by pulling the canopy emergency jettison handle (pos. 1) up and keeping the canopy from falling down,
- take away the cockpit canopy.

2. Rigging of the cockpit canopy:

- squeeze the spring (pos. 3) by pulling the handle (pos. 4) down and fixing it in the intermediate position,
- position on the cockpit canopy on the cockpit,
- attach the cockpit canopy to the fixator (pos. 2) pushing the canopy emergency jettison handle (pos. 1) forward till canopy is engaged,
- correct the cockpit canopy position with adjustment bolts (pos. 6),
- release the spring (pos. 3) switching the handle (pos. 4) into working position.

Warning: After rigging of the cockpit canopy make sure the spring device is switched into working position.

3.4.6 Removal and installation of main landing gear wheel

De-rigging of main gear wheel (fig. 3-11) is performed by theses operations:

-unbend edge of the supporting plate (pos. 1) of gear door from head of the bolt (pos. 2),
-unscrew the bolt (pos. 2),
-unscrew bolts (pos. 13) of the hydraulic cylinder (pos. 12) and remove the plate (pos. 14),
-remove an axle of gear wheel (pos. 4) removing together hubs (pos. 5, pos. 6) and support plate (pos. 7) of the main gear door,
-remove the wheel,
-leave the torque plate (pos. 3) with the hydraulic cylinder (pos. 12) in connected position together with the support (pos. 15),
-unscrew bolts (pos. 8) of the rim (pos. 10), remove the disk (pos. 9), disconnect sides of rim body and remove tyre (pos. 11) together with inner tube.

Rigging of wheel and fastening of it is performed in opposite order.

Remarks:

1. Before screwing up the bolts (pos. 8) which connect the sides of the rim body (pos. 10) and the disk (pos. 9), it is necessary to move the tyre slightly side-ways and superpose marks A on the tyre and the rim.
2. After mounting a wheel check up the gap B between hubs (pos. 5 and pos. 6). The gap B shall be equal to 0,25 ÷ 0,3 mm.

- **Wheel Brake**

The main wheel brake is a Parker / Hannifin, Cleveland hydraulic disc brake.
Brake assembly #30-9A.
Disc #164-01700.
Lining #66-106.
Master cylinder #10-55A.
Refer to the Technicians Service Guide. ,Cleveland Wheels and Brakes from Parker Aerospace for more information.

Removal and Installation

Remove the wheel brake by cutting the safety wire and unscrewing the two 1/4 dia. AN bolts that hold the brake shoe backing plate. Remove the backing plate and slide the brake

assembly out of the torque plate. Unless you intend to remove the brake unit completely do not unscrew the hydraulic hose.

Note: When the backing plate is removed do not actuate the wheel brake. Doing so will force the brake piston out and hydraulic fluid will be lost.

Adjusting of wheel brake actuation point

The wheel brake actuation point is adjusted by the threaded rod located on the hydraulic master cylinder. Loosen the jam nut and rotate the threaded rod to lengthen or shorten the linkage as necessary. With proper adjustment the wheel brake should engage with full deployment of the air brakes.

Wear Limits

The minimum replacement thickness for the brake linings is 0.100 in. (2.54 mm).
Part number 66-106.
The minimum thickness for the disc is 0.171 in. (4.241 mm).
Disc part number is 164-01700.
The torque of the 1/4 dia. bolts for the brake shoe backing plate is 60 in. lb. (6.8 Nm) Dry torque.
See the Technician's Service Guide, Cleveland Wheels and Brakes as referenced in Section 11 for further details.

Servicing the Hydraulic Fluid Reservoir

If hydraulic fluid is visible in the hose going from the reservoir to the master cylinder then fluid can be added through the top of the reservoir. Be careful not to block the vent hole in the reservoir cap when reassembling.

If the hydraulic fluid is not visible in the reservoir or in the hose going to the master cylinder it is likely that air has entered the system. The system should then be serviced from the bottom to the top using the following method.

A simple filling device is a funnel with a length of plastic tubing attached that has an inside diameter of 1/4 in.(6 mm). Fill the funnel about 3/4 full with clean brake fluid. Let the fluid push the air out of the hose. Remove the dust cap from the servicing nipple on the brake assembly and slip the hose over it. Unscrew the servicing nipple about 3/4 of a turn. Be very careful that no air enters the line during these steps. Insure there is enough fluid in the funnel. By holding the funnel above the level of the fluid reservoir, hydraulic fluid will flow into the brake lines. Continue filling until the reservoir is about 2/3 full. Tighten the nipple and remove the filling device. Install the dust cap on the nipple.

If there is fluid in the reservoir the following method can be used to bleed air out. Connect a hose from the bleeder nipple on the brake assembly to a clear container with brake fluid in it. Apply pressure to the system via the air brake handle and open the bleeder nipple. Repeat the process of opening and closing the bleed nipple as you apply pressure to the system. If the hose stays submerged in the fluid air should not enter the system. Be sure not to run out of fluid in the reservoir.

An aid to bleeding air from the system is to remove the master cylinder from its mounts but keep the hoses connected. Turn it so the chrome rod is pointing up at about a 45 deg. angle.

Removal of the hood of a cockpit bottom:
- unfasten studs (pos. 4),
- take away the hood of a cockpit bottom (pos. 2).

Mounting shall be done in an opposite order.

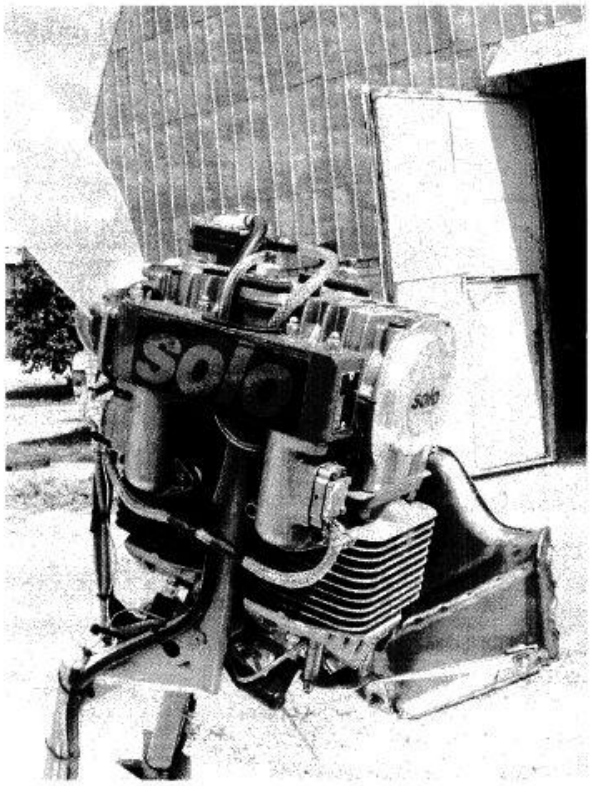
3.4.10 Removing and installing the fuel tank

To remove fuel tank from the glider, drain all fuel from the tank first. Disconnect all fuel lines and fuel level sensor wires at the wires connection. Remove main wheel cover. When main wheel cover is removed, fuel tank can be removed through the cockpit side. To install it, follow the reverse order.

3.4.11 Removing and installing the engine retaining cable

To remove the engine retaining cable, cut retaining cable near the engine mount. Unscrew and remove guide p.2 (Fig. 2-27) fixing bolt p.7. Push guide toward the tail to disengage it from the guide mount p.4. Once you feel guide is disengaged, pull it out from the fuselage. To install it, follow the reverse order.

3.4.12 Removing and installing the engine



General view of the engine installation

To remove the engine from the engine frame, first clearly identify for yourself and make a record which wire, hose or sensor is connected were.
Remove the retaining cable from the engine mount.

Unscrew and remove decompression valves from the engine.
Unscrew nut and remove decompression valves arm.
Disconnect all wires, lines and hoses from the engine which would be preventing for the engine to be removed.
Unscrew three mounting bolts which attach engine to the frame - two at the top of the engine and one at the bottom. Lift engine up to remove it from the frame.

To assemble engine back on glider, follow the reverse order.

After engine is reinstalled, check the following:
- all lines and wiring connected correctly and secured;
- no leakage in fuel lines connections;
- all bolted connections assembled correctly and secured;
- propeller brake function correctly;
- decompression valves function correctly;
- check engine extraction/retraction cycle (extension/retraction time should not exceed 12 sec.);
- check engine extracted and retracted position, adjust if needed;
- Start the engine on a ground and run for few minutes to check:
    - ignition is okay;
    - ILEC MCU is functioning properly;
    - on-ground RPM within limits. On the ground RPM should be 4850 ±100.

Warning: after the ground run do not retract engine immediately, let it to cool down.

Rubber parts such as fuel lines, shock mounts are lifetime restricted parts and have to be replaced periodically. Refer to the Section 6 of this manual.

3.4.13 Mounting and removal of the propeller

For mounting and removal of the propeller refer to the propeller manual.
Mounting of a propeller must be checked by a licensed inspector.

3.5 Illustrations

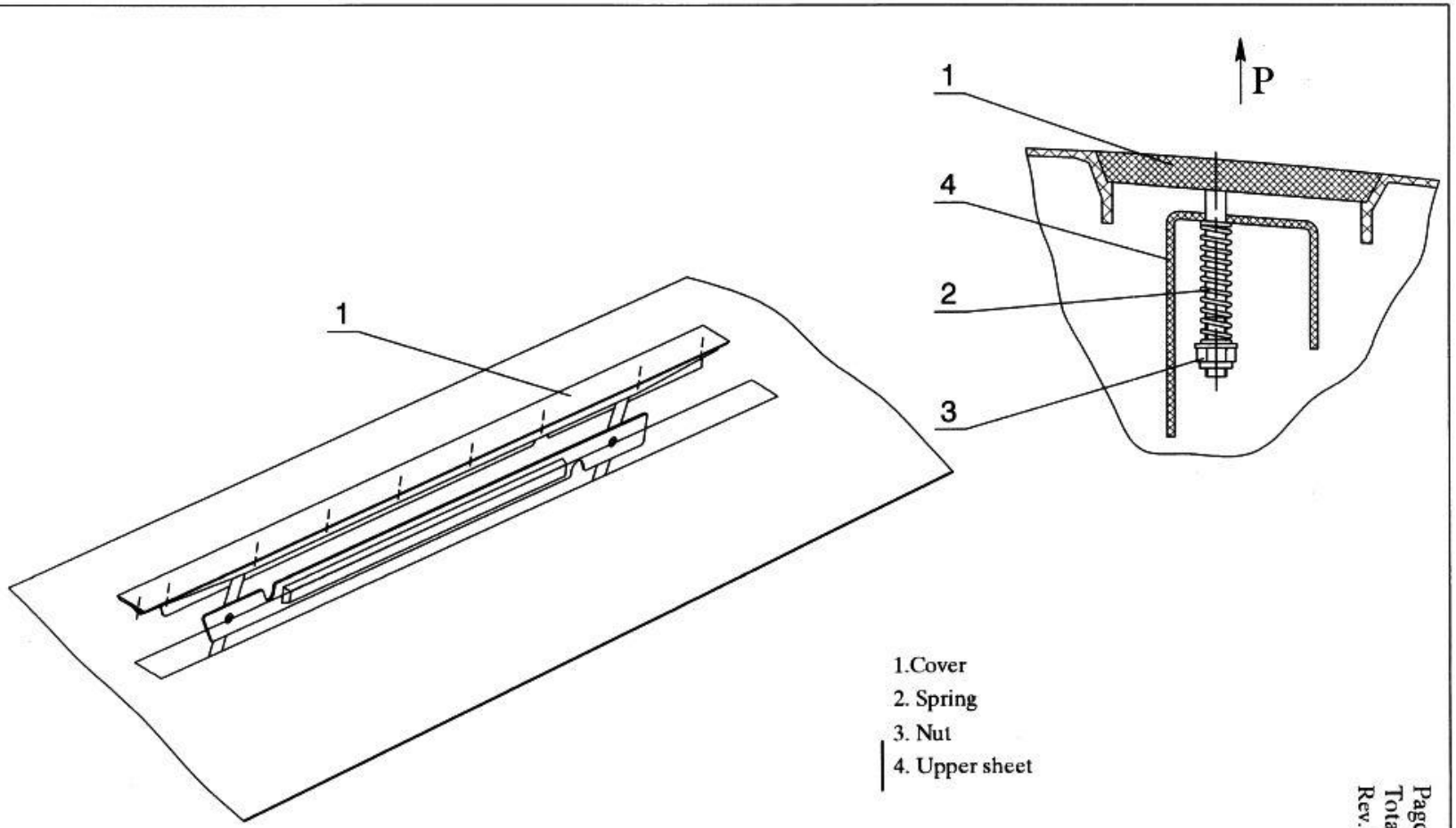
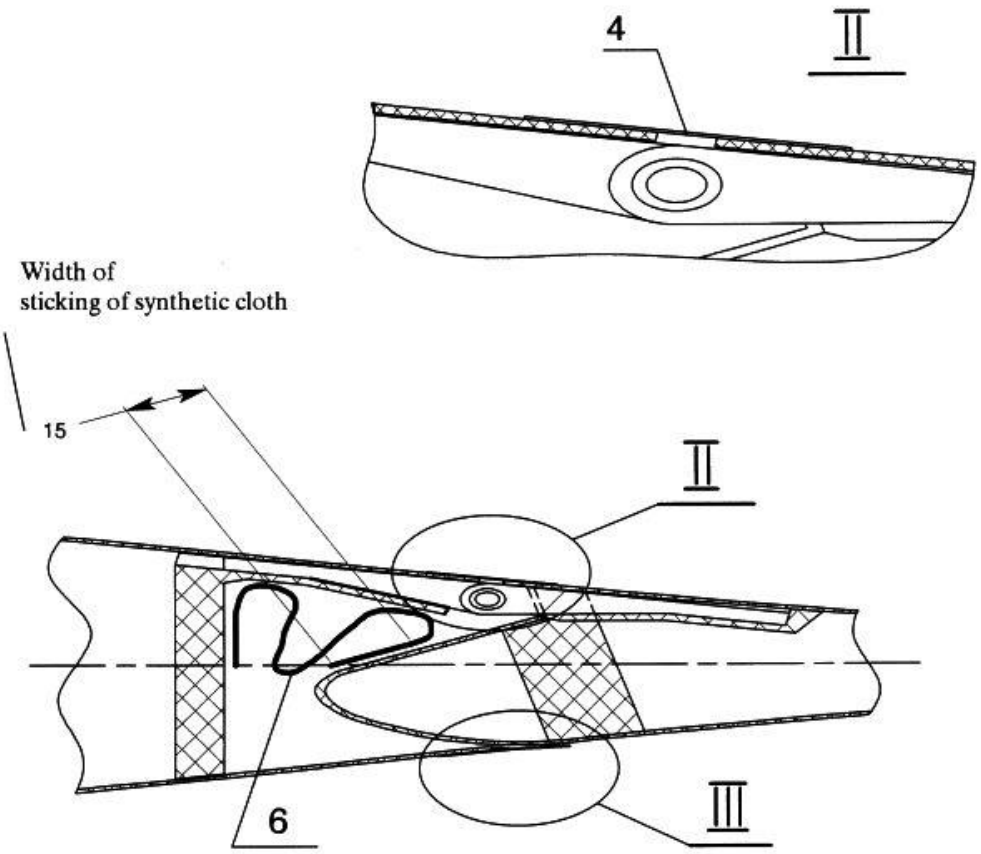


Fig.3 - 5. Adjustment of air brakes covers



1. Rudder nose
2. Joint of hanging up
3. Control bracket
4. Tightening tape PROFILBAND 22/12
5. Tightening tape
6. Synthetic cloth
7. Hinge pin
8. Washer
9. Wire split pin

Fig.3 - 9b. Hanging up of rudder

Inspection after every 100 flight hours

Date.....

No	Checking	Conformity Yes/No	Signature
314	Elevator automatic connection unit on the top of the fin		
315	Water ballast control system		
316	Condition of external surfaces of accessible metal parts (corrosion)		
317	Check for foreign objects inside of a fuselage.		
318			
400	**Horizontal tail**		
401	Surfaces of horizontal tail (paint, cracks) condition		
402	Defects of skin (cracks, holes, etc)		
403	Bonding areas		
404	Elevator root ribs		
405	Stabilizer hubs		
406	Elevator, its hinges, pins, clearances of the elevator, control connections		
407	Elevator and stabilizer connection state		
500	**Rudder**		
501	Surfaces of rudder (paint, cracks) condition		
502	Defects of skins (cracks, holes, etc)		
503	Bonded areas		
504	Rudder, its hinges, pins, clearances of the rudder, control connections		
505			
600	**Landing gear**		
601	Stands, shock absorbers, gas-spring and control system state		
602	Main wheel (pressure in wheel tire, cracks, corrosion)		
603	Main wheel retracting and releasing mechanisms - pay special attention to the condition of the retraction lever located at the wheel box.		
604	Landing gear brake		
605	Tail wheel (pressure in wheel tire, cracks)		
700	**Control systems**		
701	Elevator control system (movement, friction, clearances, fixings)		
702	Ailerons control system (movement, friction, clearances, fixings)		
703	Airbrakes control system (movement, friction, clearances, fixings)		
704	Rudder control system (movement, friction, clearances, fixings)		
705	Pedals adjust system		
706	Trimmer control system operation		
707	Tow release control system (movement, friction, clearances, attachments)		
708	Attachment of cockpit canopy and its emergency jettison system operation		
709	Canopy ventilation control system		
710	Water ballast control system operation		

5. To measure the distance D (mm) from center of main landing wheel axle to tail wheel axis.

6. To measure the distance d (mm) from center of main wheel axle to reference point DP.

Note: The distances **D** and **d** are measured on the ground according to corresponding projections of measurement points.

7. To weigh an equipment of sailplane positioning and determine the weight of sailplane tail G2 by subtracting the weight of an auxiliary equipment from the weight of sailplane tail part with an auxiliary equipment.

8. To calculate C.G.:

a) C.G. of empty sailplane

$$Xcgemp = \frac{G2 * D}{Gemp} + d, \text{ mm}$$

b) C.G. of sailplane with a pilot:

$$Xcg = \frac{G2 * D}{Go} + d, \text{ mm}$$

Note: 1) weights G2, Gemp, Go are assumed for corresponding weighing variant.

Warning: it is important to do weighing or calculation of c.g. for forward limit with **engine extracted** and for rear limit with **engine retracted** as engine position makes big influence for c.g. position.

9. To check if position of C.G. is within an allowed range **for both engine extracted and retracted**.

If C.G. is outside the allowed boundaries position the sailplane C.G. shall be corrected by the help of lead ballast (Fig.7-3, Fig.7-4, Fig.7-5):

- required mass of lead for correction of C.G. position can be calculated or determined by actual balancing and checking the sailplane C.G.,
- lead ballast of required size can be supplied by Joint Stock Company "Sportinė Aviacija",
- depending on how position of C.G. shall be corrected, lead shall be attached on partition wall in fore body behind pedals joint or on rear wall of fin after removal of rudder.

Warning: Flying with removed engine is not allowed.

7.3 Weight of non-lifting parts of the sailplane

Weight of non-lifting parts of the sailplane includes weight of pilot, fuselage, stabilizer with elevator, rudder, instruments and equipment.

8.3 Repair of parts of advanced composites

8.3.1 Conditions for repair works

Premises where repair is carried out must be clean, warm and properly lighted. Temperature during repair must be ≥ + 20°C and humidity ≤ 65%.

The optimal processing temperature for resin- hardener systems lies in range between 20° C and 25°C. Heat treatment must be performed keeping temperature of 50-60°C for 15 hours.

Advanced composite repairs should only be performed by adequately trained and qualified trained and qualified repair persons.

8.3.2 Classification of damage

The sailplane construction is divided into three zones with allowed sizes of damage in them (fig. 8-1a, fig. 8-1b, table 8-1).

Table 8-1

Pos. No	Repair damage	Zone 1	Zone 2
1	An opening	ϕ 100 mm	ϕ 40 mm
2	Crack (split)	200 mm	100 mm
3	Damage of leading edge	100 mm – for ailerons, flaps ~~40 mm – for wings~~	40 mm – for fin, stabilizer, 40 mm – for wings
4	Damage of trailing edges	200 mm	
5	Damage of paint coating	Without restrictions	

It is allowed to repair these constructive damages in the certified repair station:

1) composite material delamination, cracks at structural joints,
2) damage of wing roots and end ribs,
3) cracks and fractures of metal constructions,
4) cracks and delamination of skins of fuselage, wings, stabilizer, controls, wings tips and damages in a structural parts.

For the above it is necessary to get corresponding technical information and recommendations from the manufacturer of the sailplane.

Damage of wings spars may only be repaired by the manufacturer of the sailplane.

8.3.3 Typical repair of sailplane aggregates skins

Typical repair works of sailplane aggregates skins are shown in fig. 8-2.

If a part of advanced composites is damaged partially not through (fig. 8-2,a) its repair must be performed as follows:

- make round edges of a damaged zone,
- take out foam of opening (fig. 8-2,b) and check the internal layer for damage,
- if an internal layer is not damaged, prepare an upper coating for repair (fig. 8-2,b),
- glue in foam,
- after glue polymerization, sand the repaired zone with sand paper and then lay-up on it the required number of repair layers of cloth at given angle of reinforcement (fig. 8-1a, fig. 8-1b, fig. 8-2,c).

0.1 Record of revisions

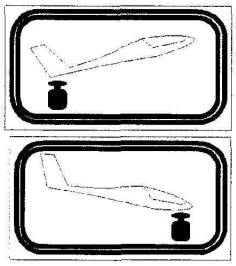
Any revision of the present manual, except actual weighing data, must be recorded in the following table and in the case of approved Chapters, endorsed by the responsible airworthiness authority.

The new or amended text in the revised page will be indicated by a black vertical line in the left hand margin, and the revision number and date will be shown on the bottom left hand of the page.

Rev. No.	Affected Chapter	Affected Pages	Date of Issue	Approval	Date of approval	Date of Insertion	Signature
1	i	7-4	30 01 2008				

7.3 Flight controls and trim

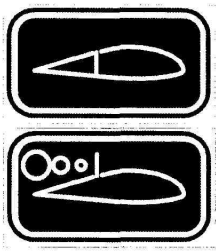
The ailerons and elevator are operated from the central control column (control stick).



The trim adjustment control knob is located ***in the left armrest*** and controls the elevator trim select position. See Maintenance Manual Section 2. To set the trim, simply move the adjustment knob to the desired trim position.

The rudder pedals control the rudder by a cable system and are adjusted using the gray knob located in the right arm rest. Pull the knob to loosen the rudder pedal lock, make the adjustment, and release the knob to lock the rudder pedals in the desired position.

7.4 Airbrakes and wheel brake



The airbrakes are operated by the blue control handle located on the left cockpit wall. Pull the handle back to extend the airbrakes and push forward to retract and lock.

The wheel brake is actuated via the handle of airbrakes. See Maintenance Manual Section 2.

The mechanical wheel brake system is optional. The main wheel brake is controled by a handle arranged on the control stick.