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VÝROBCE ULTRALEHKÝCH LETADEL LIGHT SPORTS AIRCRAFT MANUFACTURER

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Alert service bulletin no. SB02/2016

Issued by: ATEC v.o.s., Opolanska 301, 289 07 Libice n/C, Czech Republic

Subject: Fabric coating of wings, horizontal tail and vertical tail rudder on all types of ZEPHYR aircraft

Date of issue: 1.9.2016

Effective from: Immediate validity, before next flight

Affected products: ZEPHYR, ZEPHYR 2000 and ATEC 122 Zephyr

Serial numbers of affected products: All Zephyr airplanes

Distribution list:

1. Aircraft producer's website: www.atecaircraft.eu/en
2. Federal Public Service, Air Accident Investigation Unit, Belgium
3. Air Accidents Investigation Institute, Czech Republic
4. Light Aircraft Association of the Czech Republic
5. Belgian ULM Federation, Belgium
6. All ATEC distributors
7. All appropriate CAA or authorization bodies of the countries where ZEPHYR airplanes were delivered

Tools: any thin knife (scalpel), measuring equipment



Pic. 1: example of the tool suitable for inspection of coating attachment

Spare parts: white plastic tape, width: 25mm, length: 24 m, on customer's expenses



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REASON:

A separation of the fabric coating from the right wing in-flight was observed at ATEC 122 Zephyr airplane. The airplane returned to the airport and safely landed. The incident occurred due to exceeding of the lifetime of the coating which is 10 years since the airplane came into operation as stated by its manufacturer. The material lifetime can be shortened due to poor condition of the fabric bonding caused by extremely unsuitable climatic conditions. Improper adherence of the fabric coating is indicated by slight lifting or detachment of the fabric on bonded edges or identified by easy intrusion of an applicable sharp thin tool between the fabric coating and inside wing structure. In such case the airplane is considered as not airworthy and it is necessary to make re-coating of all parts of the airplane.



Pic. 2: Fabric coating separated from the upper part of the wing



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Pic. 3: Fabric coating separated from the upper part of the right wing

CORRECTIVE ACTION:

1. The airplanes not older than 10 years

Check the bonding of the coating on wings and horizontal tail before next flight. There must not be any visible crack between the fabric coating and hard surface of the wing. If even limited detachment of the coating is observed, try to input any sharp tool into that slit and gently pass the tool through it to check its depth. If the tool is able to easily intrude between the coating and wing structure, it is necessary to remove the aircraft from service and to make its complete re-coating. If the tool is not able to intrude into the slit, bond the slit by contact glue to avoid water intrusion between the fabric coating and wing structure and so to avoid further degradation of bonding. We recommend to cover the bonded connection situated on torsion box of the wing and horizontal tail by white plastic tape of 25mm width. The tape shall be placed in a position to cover the connection of torsion box and coating by its middle part.



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2. The airplanes older than 10 years

Check the bonding condition same way as described by the par. 1. Then, cover the connection on the torsion box of the wing and horizontal tail by white plastic tape. Ask the aircraft producer or its authorized workshop for re-coating.

The aircraft older than 10 years shall pass the major overhaul (MO) as prescribed by appropriate Operations and Flight Manual of the aircraft. After the MO is performed, the aircraft becomes airworthy for the next TBO of 10 years, unless determined otherwise by the producer. The range of works provided during MO is listed in appropriate Aircraft Maintenance Manual and may differ according to actual aircraft condition and its components.

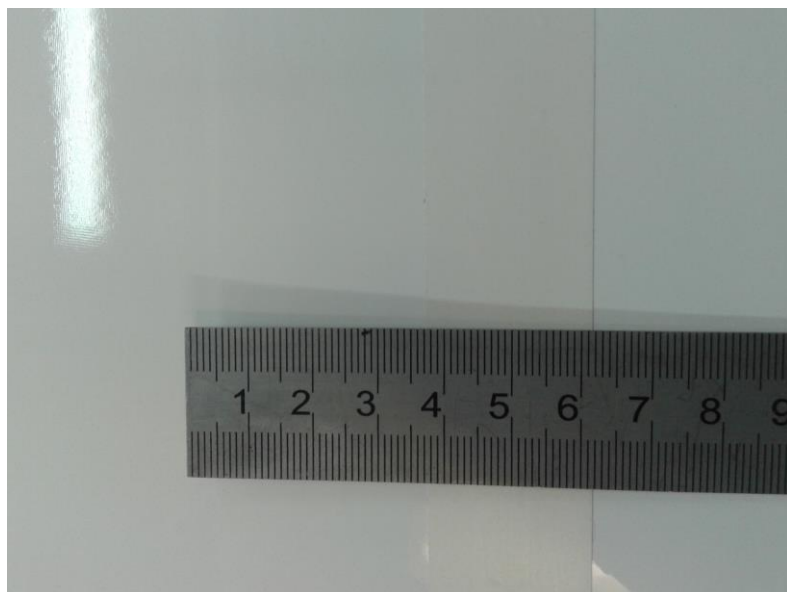
The MO of other parts (engine, propeller, rescue system...) is directed by Operations and Maintenance Instructions of their appropriate producers.

3. The producer extended the width of bonded connection on torsion box of the wing. The original width of 35mm is now extended up to 50mm. The connection is covered by white plastic tape.

4. The producer placed the Report Form on his websites. Based on this form, the owner of Zephyr airplane shall report the information about the condition of the coating on his plane to the producer. Such information shall be transmitted to the producer once in 2-years period. This requirement will be mentioned in appropriate Operations and Flight Manual. The Report Form is the enclosure no.2 of the Operations and Flight Manual and is also available to download from producer's websites. See the Form attached to this Bulletin below.

5. The producer added the information about regular inspection of the coating and instructions to such inspection into the Operations and Flight Manual, Par. 4.1., Par. 8.1., 8.1.1. and 8.1.2. See below pages attached to this Bulletin to be inserted to your Operations and Flight Manual.

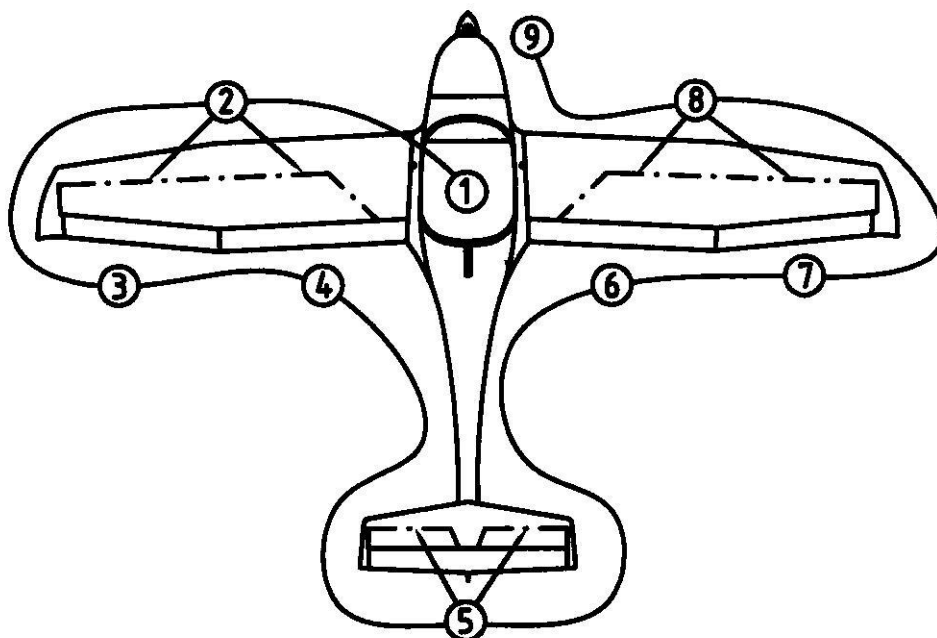
6. In the Operations and Flight Manual, Par. 8.3., the producer added the definition of TBO, information about its importance: "After the TBO is expired, the next operation of the airplane can not be considered as safe and due to this reason it is not allowed to exceed the TBO limit." and specification of works provided during major overhaul.



Pic. 4: Detail of the tape covering bonded connection of the coating on torsion box

4.1. Pre-Flight Inspection

It is important to carry out appropriate pre-flight inspection. To perform a negligent or incomplete inspection could be a cause of accident. The Manufacturer recommends to make following procedure:



- 1/ Cockpit – switches, seat belts, instruments, seats, controls, canopy locks, canopy condition check
- 2/ Left wing – coating and fabric bonding condition*, play, Pitot tube
- 3/ Left aileron – coating and fabric bonding condition*, free movement, attachments, controls
- 4/ Left flap – coating and fabric bonding condition*, attachments, controls, play
Left main gear leg – condition, brake fluid leak, wheel spat
- 5/ Tail – surface condition, coating and fabric bonding condition*
VT – surface, attachments, control
HT – coating, attachments, fitting covers
Rudder – surface, attachments, control
- 6/ Right flap - coating and fabric bonding condition*, attachments, controls, play
Right main gear leg - condition, brake fluid leak, wheel spat
- 7/ Right aileron - coating and fabric bonding condition*, free movement, attachments, controls
- 8/ Right wing – coating and fabric bonding condition*, play
- 9/ Nose wheel – condition, play, wheel
Engine – operation liquids amount, engine cowling
Propeller – condition, spinner tightness

* for detailed instructions see Art. 8, Par. 8.1., 8.1.1. and 8.1.2.

(to be inserted into your Operations and Flight Manual - effectivity since 1st Sept. 2016)

8.1. Maintenance schedule

Inspection, Mandatory Work	Inspection Period				
	10	25	50	100	200
Engine					
As per ROTAX Manual attached.					
Engine Compartment					
Engine Attachment Check integrity of construction with special care for welds, fixing points, silent blocks, bushings. Surface finish quality.				x	
Bolted Connections Check surface quality of bolted connections and bearing surfaces. Securing, tightening. Tighten and re-secure if necessary, Replace self locking nuts, split pins and securing wires.			x		
Silent Blocks Check elasticity of engine bearing, integrity of rubber blocks, degree of permanent deformation. Replace silent blocks if necessary, tighten, secure.				x	
Oil, Water and Fuel Hoses Check surface integrity, liquid leakage, quality of connections, protection against oscillating parts and exhausts. Replace if necessary.		x			
Working Liquids Check level, refill keeping instruction of engine manufacturer.	x				
Coolers Check integrity, sealing, purity.				x	
Controls Check control forces, free play, hinges, end stops adjustment, self-locking. Adjust, secure.			x		
Exhausts Check integrity, sealing, corrosion degree, springs quality and prestress. Grease ball connections.				x	
Carburettors Check surface quality, controls adjustment, quality of elastic connection flange – integrity, sealing. Replace flange if material degradations or surface cracks appear.		x			
Electric Installations Check quality, integrity and purity if cables, contacts, welds, bunched cable supports and bushings. Check gauges and senders connections.					x
Propeller Attachment Check quality of bolts, tightening moments, securing.				x	
Cockpit					
Control Sticks Check free movement in longitudinal and cross direction, clearance fits, end stops adjustment, securing. Replace pins or bolts if worn-out, grease, secure.				x	
Rudder Control Check integrity of pedals with special care for surface cracks near welds. Full and free movement right and left (raise nose wheel off ground), end stops adjustment, rudder cable tensioning, clearance fits, securing. Adjust, replace worn-out parts, grease, secure.				x	
Flap Control Check free movement of flap control lever, stable bearing in every flap position, interlock pin wear. Replace worn-out parts, grease, secure.			x		
Canopy – Open / Close Check quality and function of locks and hinges, canopy bearing. Adjust, replace worn-out parts, grease, secure.					x

Flight Control Instruments Check legibility, markings, attachment instruments in panel, installations, wiring.					X
Electric Installations Check quality, integrity and purity of cables, insulations, contacts and welds. Battery attachment, working condition.					X
Safety Belts Check fixing points rigidity, belt surface quality, adjustment.				X	
Fuel System Check leak-proof condition, fuel supply quality, fuel pumps and valve function, tank deaeration. Replace fuel filters.		X			
Parachute Rescue System Check general condition, attachment. Do mandatory work as per instructions of rescue system manufacturer.					X
Landing Gear					
Main Gear Check attachment rigidity, surface quality, degree of permanent deformation.			X		
Wheels Check attachment, brakes condition, brake pads, disc quality, leak-proof condition. Attachment and purity of wheel spats.		X			
Front Gear Check general condition, integrity, rubber damper, clearance, springing deflection, steering quality. Grease sliding bearings, replace rubber springs if worn-out.		X			
Fuselage Check general condition, integrity. Antennas, lights and coverings attachment.					X
Wing Check general condition, surface quality, integrity, attachment, fittings, play. Ailerons and flaps condition, surface quality, hinges, play, securing. Controls condition, free movement, end positions, clearance. Pitot tube condition and attachment. Check the condition of the coating and fabric bonding (see the Par. 8.1.1., 8.1.2.).	X				
Tail Surfaces					
Rudder, Elevator Check general condition, hinges, movement, clearance, securing. Check the condition of the coating and fabric bonding (see the Par. 8.1.1., 8.1.2.).					X
HT Stabilizer Check general condition, attachment, fittings, securing.				X	
	10	25	50	100	200

8.1.1. Inspection of the condition of the coating and fabric bonding

There can not be any visible crack between the fabric coating and hard surface of the wings/ elevator/rudder. If even limited detachment of the coating is observed, try to input any sharp tool (e.g. knife) into that slit and gently pass the tool through it to check its depth. If the tool is able to easily intrude between the coating and wing structure, it is necessary to remove the aircraft from operation and to make its complete re-coating. If the tool is not able to intrude into the slit, bond the slit by contact glue to avoid water intrusion between the fabric coating and wing structure and so to avoid further degradation of bonding.

We recommend to cover all bonded connections situated on torsion box of wings and horizontal tail by white plastic tape of 25mm width. The tape shall be placed in a position to cover the connection of torsion box and coating by its middle part.

8.1.2. Report about the condition of the coating and fabric bonding

The owner of the airplane shall periodically report the information about the condition of the coating on his airplane via Report Form in the Enclosure 2. The Report Form is also available to download from producer's websites: www.atecaircraft.eu. Such form shall be transmitted to the producer once in 2-years period.

8.2. Major Overhaul

The major overhaul is carried out after 1500 flight hours but not later than 10 years after putting the aeroplane into operation, unless decided otherwise during regular technical inspections or by producer's bulletin. The overhaul will be carried out in the ATEC factory or in a professional workshop authorized by the ATEC. The engine overhaul and maintenance are carried out according to the instructions of the engine producer.

The time between overhauls (TBO) is the period approved to operate the airplane under normal operational conditions before the obligation to deliver the airplane for major overhaul arises. After the TBO is expired, the next operation of the airplane can not be considered as safe and due to this reason it is not allowed to exceed the TBO limit. Normal operational conditions are such conditions which are in compliance with the requirements of the manufacturer and appropriate aviation authority.

The TBO limit assessed by the manufacturer and by appropriate authority is based on airplane performance tests and operation experience necessary to reach the airworthiness approval. The TBO limit can be changed by the producer based on production progress intended for TBO extension.

The TBO limit is always directed by flight hours or flight records. The number of flight hours shall be recorded in the logbook. The entry about the execution of the major overhaul shall be recorded in the logbook by the manufacturer or by his authorized service centre by which the major overhaul was carried out.

Except other worn-out parts and other components subjected to maintenance instructions according to their appropriate manual, the following works are being performed during the major overhaul:

- Re-coating of fabric on wings, ailerons, flaps and horizontal tail
- New impregnation of the wooden frame of wings and horizontal tail
- Conservation of internal tubes of the centre wing
- Engine mount replacement
- Wings attachments inspection
- Undercarriage inspection, rubber springs exchange
- Electrical installation and battery inspection
- Replacement of all engine hoses
- Back-up fuel pump inspection
- Fuel tank leak inspection, pressure test
- Steering inspection and parts replacement, plays correction
- Inspection of rescue system attachments
- Exhaust system inspection



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(to be attached to your Flight and Operations Manual as the Enclosure 2)

REPORT FORM - ZEPHYR AIRCRAFT

WINGS AND HORIZONTAL TAIL COATING CONDITION		
Producer: ATEC, v.o.s., Opolanska 350, 289 07 Libice n./C., Czech Republic		
This form and the photo shall be submitted to: sales@atecaircraft.eu		
<p>This form serves to report the condition of your aircraft to its producer based on findings from your regular inspections and shall be submitted to the producer once in 2-years period or immediately after some findings or anomalies are detected on horizontal tail or wings coating.</p> <p>At least visual inspection of horizontal tail and wings coating condition shall be performed before each flight according to Par. 4.1. of the Flight and Operations Manual.</p> <p>Please fill-out this form and describe the findings from your regular inspection of the aircraft. Mark affected areas on the drawing on the next page 2 and 3 as most exactly as possible. Send the photo of your findings as the attachment to this form.</p> <p>Correct and exact description of your findings will help us to identify the problem and suggest its appropriate solution as soon as possible. Non-authorized repairs or modifications are not allowed.</p>		
Aircraft s/n:	Registration sign:	
Owner's name:		
Contact (address, tel., e-mail):		
Description of the horizontal tail and wings coating condition:		
Anomalies founded (mark the option):	NO	YES – see the description below:
Other findings:		
I send the photo of my findings attached.		
Inspection date:	Owner's signature:	



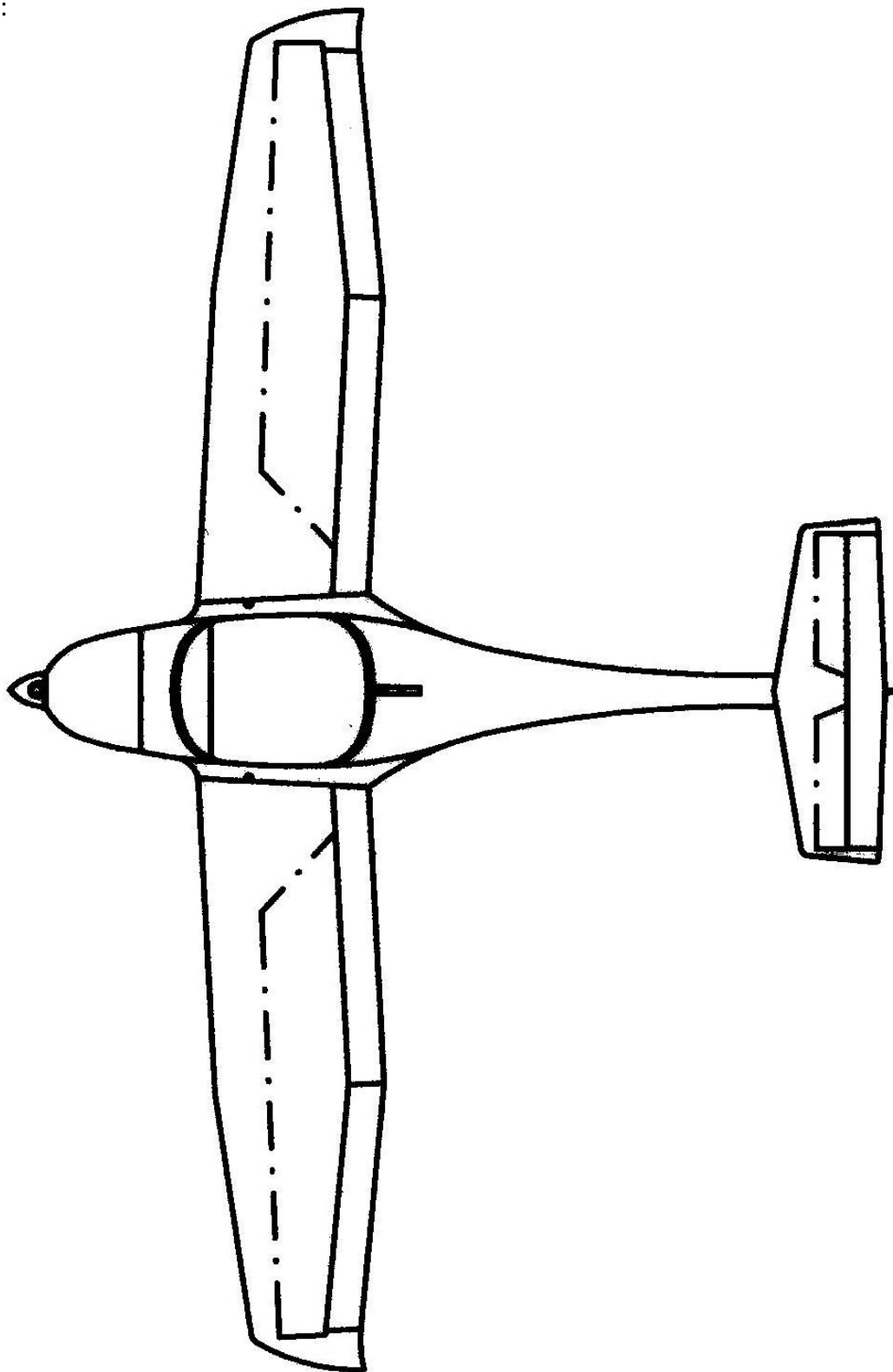
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View from above:





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Bottom view:

