

Safety Information Letter concerning sailplane storing conditions and corrosion of flight control systems

Background

There has been reported occurrence of corrosion on flight control pushrods and rod ends inside the wings of PIK-20 D sailplanes stored in unventilated trailers. In one occasion this has led to pushrod rod end fracture. As the loading during flight in normal operation is very low, a possible cause is that the rod end bearing has seized due to the corrosion causing bending loads in the rod end shank when actuating the flight controls. Rod end fracture could cause loss of control of the aircraft, if occurring in a single load path control line, such as the elevator control line.



Picture 1 Corroded and fractured push rod rod end inside a wing.

The English translations of PIK-20, PIK-20 B and PIK-20 D Service Manuals are missing the following text at the end of Paragraph 4.1:

When storing the sailplane in a trailer it is important to see that there is no water lying in the trailer. Felt on fuselage and wing holders should be dry.

There must be ventilation holes in the trailer.

When storing the sailplane for longer periods, it is good to use silicagel in the trailer and tape the trailer airtight to keep the air dry. It should also be checked that there is no water in the wing. The water bags should be drained carefully and the sealings should be removed from the wing rib to get the air to circulate.

All bare metal parts should be protected with grease.

Recommendation

Some commercial materials for drying the air contain salts that promote corrosion, such as common salt Natrium Chloride NaCl, Calcium Chloride CaCl₂ and Kalium Formiate KCOOH. It is not recommended to use materials containing salts for drying the air when storing the glider.

The corrosion problem is not specific for only PIK-20 series but is a common risk for all types of aircraft having push rod type flight controls with similar rod ends and are stored for a longer period in an unventilated trailer. For this reason it is recommended to carry out the following actions on all gliders and motor gliders:

1. Review the history of the aircraft. If it is suspected that the aircraft may have been stored in an unventilated trailer for longer periods (more than a few weeks) in humid ambient conditions, perform the actions of point 4 before further flight.
2. Check the free movement of all flight controls. If increased control forces are detected, locate the reason and rectify before further flight.
3. If not already accomplished by point 1, accomplish the actions 4 at next annual inspection.
4. Perform following actions:
 - 4.1. Check visually the flight control pushrods, rod ends and bell cranks inside the wings and rear fuselage for corrosion. An endoscope, a small video camera or similar device may be used for inspecting areas of limited access.
 - 4.2. Check visually control surface hinges where rod ends have been used.
 - 4.3. Check visually landing gear push rods and rod ends.
 - 4.4. Check visually horizontal tail brackets where rod ends have been used.
 - 4.5. If significant corrosion is detected, rectify corroded parts by replacement or using approved methods and replace corroded rod ends especially when there is corrosion in the rod shank thread with serviceable ones before further flight.