Aviation Investigation Final Report

Location:	Caldwell, Idaho	**Accident Number:**	SEA04LA103
Date & Time:	June 5, 2004, 10:30 Local	**Registration:**	N1852N
Aircraft:	D'Amico Kitfox Series 7	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that he accomplished his normal run-up and control checks prior to takeoff. The pilot stated that as the aircraft was accelerating during the takeoff ground roll, he suddenly could not feel the usual back-pressure on the elevator control. The pilot checked the manual trim and confirmed that it was in the takeoff position and as he was about to reduce power to abort the takeoff, the "...plane catapulted up in the air at a high angle of attack, without pitch control input from me." The pilot stated that he immediately put the manual pitch trim control in a nose-down range and the airplane responded "violently." The pilot continued to manipulate the elevator trim as the aircraft oscillated three to four times before gradually attaining a more level attitude. The aircraft landed hard and flat on the remaining runway, subsequently breaking the nose gear wheel, and damaging the propeller and main gear. Further damage included buckled floor boards and structural damage to the fuselage. Post-accident inspection of the airplane found that the connecting bolt between the pitch control assembly and the pitch rod (to the elevator) had come off. The bolt was located, however, the self-locking castle nut with a nylon insert which the pilot stated that he used to secure the bolt was not located.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The disconnection of the elevator pitch control assembly and the pitch rod during the takeoff as a result of an unsecured bolt.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (C) MISCELLANEOUS,BOLT/NUT/FASTENER/CLAMP/SPRING - MISSING
2. (C) FLT CONTROL SYST,ELEVATOR CONTROL CABLE/ROD - DISCONNECTED

Occurrence #2: FORCED LANDING
Phase of Operation: TAKEOFF - ABORTED

Occurrence #3: HARD LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Findings
3. TERRAIN CONDITION - RUNWAY

Factual Information

On June 5, 2004, about 1030 mountain daylight time, an experimental D'Amico Kitfox Series 7, N1852N, registered to and flown by the pilot as a 14 CFR Part 91 personal flight, experienced a hard landing at Caldwell Industrial, Caldwell, Idaho. Visual meteorological conditions prevailed at the time and no flight plan was filed for the local flight. The aircraft was substantially damaged and the private pilot, the sole occupant, was not injured.

During a telephone interview and subsequent written statement, the pilot reported that he accomplished his normal run-up and control checks prior to takeoff from runway 12. The pilot stated that as the aircraft was accelerating during the takeoff ground roll, he suddenly could not feel the usual back-pressure on the elevator control. The pilot checked the manual trim and confirmed that it was in the takeoff position and as he was about to reduce power to abort the takeoff, the "...plane catapulted up in the air at a high angle of attack, without pitch control input from me." The pilot stated that he immediately put the manual pitch trim control in a nose-down range and the airplane responded "violently." The pilot continued to manipulate the elevator trim as the aircraft oscillated three to four times before gradually attaining a more level attitude. The aircraft landed hard and flat on the remaining runway, subsequently breaking the nose gear wheel, and damaging the propeller and main gear. Further damage included buckled floor boards and structural damage to the fuselage.

After the aircraft was pushed off the runway and returned to the pilot's hangar, the seats were removed to view the pitch push rod assembly. The pilot reported that he found that the connecting bolt between the pitch control assembly and the pitch rod (to the elevator) had come off. The pilot discontinued the inspection and notified the Federal Aviation Administration of the accident and his findings. An Inspector from the Boise, Idaho, Flight Standards District Office inspected the aircraft and confirmed the findings. The Inspector reported that the bolt used to secure the elevator control push rod to the push rod end was found laying on the bottom of the elevator control surface. The nut which was used to secure the bolt was not found.

The pilot reported that the nut used to secure the bolt was a self-locking castle nut with a nylon insert. The pilot also reported that the controls had been previously inspected by a Designated Airworthiness Representative (DAR) and signed off. The DAR reported that he was sure that he confirmed the presence of the nut during his inspection and sign-off of the aircraft on April 24, 2004.

During a follow-up conversation with the pilot on July 16, 2004, he reported that after an extensive search of the aircraft, the missing nut was not located.

Pilot Information

Certificate:	Private	**Age:**	51,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	May 8, 2003
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	May 23, 2003
Flight Time:	440 hours (Total, all aircraft), 10 hours (Total, this make and model), 11 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	D'Amico	**Registration:**	N1852N
Model/Series:	Kitfox Series 7	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	S60111-074
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	April 24, 2004 Annual	**Certified Max Gross Wt.:**	1550 lbs
Time Since Last Inspection:	10 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	10 Hrs at time of accident	**Engine Manufacturer:**	Rotax
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	912ULS
Registered Owner:	Michael J. D'Amico	**Rated Power:**	100 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	EUL,2431 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	10:35 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	140°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.88 inches Hg	**Temperature/Dew Point:**	26°C / 11°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Caldwell, ID (EUL)	**Type of Flight Plan Filed:**	None
Destination:	(EUL)	**Type of Clearance:**	None
Departure Time:	10:30 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Caldwell Industrial EUL	**Runway Surface Type:**	Asphalt
Airport Elevation:	2431 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	12	**IFR Approach:**	None
Runway Length/Width:	5500 ft / 100 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	47.589138,-116.909851(est)

Administrative Information

Investigator In Charge (IIC):	Eckrote, Debra
Additional Participating Persons:	Lewis H Sanders; FAA/FSDO; Boise, ID
Original Publish Date:	October 28, 2004
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=59417

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