Aviation Investigation Final Report

Location:	Kingsford, Michigan	**Accident Number:**	CEN23LA165
Date & Time:	April 13, 2023, 12:00 Local	**Registration:**	N413EK
Aircraft:	PIPISTREL LSA SRL SINUS	**Aircraft Damage:**	Substantial
Defining Event:	Powerplant sys/comp malf/fail	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot stated the engine lost power as he increased power for takeoff. The engine could not be restarted, and the airplane was pushed off the runway onto a taxiway. The pilot allowed the engine to cool and then restarted the engine. The engine ran smoothly for about one minute. When engine power was increased above 4,000 rpm, the engine lost power again. The pilot performed 2 additional engine starts, which also resulted in the engine quitting above 4,000 rpm. The pilot then noticed white smoke emitting from the engine compartment. A fire ensued that resulted in substantial damage to the motorglider.

Postaccident examination of the engine revealed that the right carburetor bowl cover was attached to the carburetor bowl but the carburetor bowl cover retention clip was not in its secure position on the bowl cover. The left carburetor bowl cover was missing and was not recovered; it most likely fell out of the motorglider or was dislodged from the airplane when the fire was being extinguished. An unsecured bowl cover would have allowed fuel to leak onto hot exhaust pipes, resulting in a fire.

Neither carburetor had optional carburetor drip trays installed to mitigate the risk of an engine fire from fuel leaking onto the engine exhaust from the carburetors by directing it away from the exhaust and overboard, which may have prevented the accident.

Engine logbook entries showed that the carburetor bowl covers were removed during recent maintenance. It is likely that the covers were not properly reinstalled during that maintenance.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The failure of maintenance personnel to properly secure the left carburetor bowl cover, which resulted in an engine fire before takeoff.

Findings

Personnel issues	Installation - Maintenance personnel
Aircraft	(general) - Not installed/available
Aircraft	Fuel control/carburetor - Incorrect service/maintenance
Personnel issues	Aircraft/maintenance logs - Maintenance personnel

Factual Information

History of Flight

Prior to flight	Aircraft maintenance event
Taxi-into takeoff position	Powerplant sys/comp malf/fail (Defining event)
Taxi-into takeoff position	Fire/smoke (non-impact)

On April 13, 2023, about 1200 central daylight time, a Pipistrel LSA SRL Sinus, N413EK, was involved in an accident near Iron Mountain, Michigan. The motorglider sustained substantial damage. The private pilot and a passenger were uninjured. The motorglider was operated under Title 14 *Code of Federal Regulations* (CFR) Part 91 as a personal flight.

The pilot stated the engine lost power when he increased power for takeoff. The engine could not be restarted and the airplane was pushed off the runway onto a taxiway. The pilot allowed the engine to cool and then restarted the engine. The engine ran smoothly and with no roughness for about one minute. When engine power was increased above 4,000 rpm, the engine lost power again. The pilot performed 2 additional engine starts, which also resulted in the engine quitting above 4,000 rpm. The pilot then noticed thin white smoke from the engine compartment. A fire ensued that resulted in substantial damage to the motorglider. The fire was extinguished by airport firefighting when the engine was sprayed with a firefighting agent.

Postaccident examination of the motorglider revealed the left aft side of the engine and bottom engine cowl displayed greater thermal damage than the right side engine and engine cowl. Thermal damage of the bottom left side of the engine cowl extended almost the full length, as viewed from nose to tail, and about mid-length of its right side.

The left carburetor, as viewed from the aircraft tail to nose, was present and separated from its induction tube rubber flange due to thermal damage separation. The carburetor induction tube mating clamp was present and unbroken. The carburetor control cables were attached and secure. The carburetor bowl cover was not present, and the carburetor bowl retention clip was intact, unbroken, and secured to the carburetor body. The carburetor bowl cover was not found. The carburetor bowl displayed soot and the metal components within the bowl did not display melting.

The right carburetor, as viewed from the aircraft tail to nose, was present, attached, and secured, to its induction tube rubber flange. The carburetor control cables were attached and secure. The carburetor bowl cover was attached to the carburetor bowl, and the carburetor bowl retention clip was not positioned in its secure position onto the bowl. The retention clip was intact, unbroken, and secured to the carburetor body.

The left and right carburetors did not have carburetor drip trays installed, which have a part number of 874300 for Rotax 912 and 914 engines. The drip trays are optional unless the engine is ordered from Rotax with an airbox. Pipistrel did not order the engine with a Rotax airbox. The drip trays mitigate the risk of an engine fire from fuel leaking onto the engine exhaust from the carburetors by directing it away from the exhaust and overboard.

The engine logbooks showed that the most recent maintenance entries for the engine were made by an independent Rotax Maintenance Technician (iRMT), who completed 9 Series Service and 9 Series Maintenance training. His iRMT certification had an expiration date of October 21. 2023. To be eligible to perform carburetor overhauls, one must complete the Rotax 9 series overhaul course, which is restricted to designated and approved facilities. The mechanic was not certified to perform carburetor overhauls; however, the mechanic was authorized to perform maintenance tasks on carburetors such as changing floats, balancing/synchronizing them, changing jets, and conducting 200-hour service inspections, among others.

14 CFR Part 91.417(a)(1)(ii) requires the date maintenance was completed to be included in aircraft logbook entries.

The second to last engine logbook entry wasdated December 6, 2022, and cited a tachometer time of 224.7 and a Hobbs time of 309.7 hours. The entry stated that the [carburetor] float bowls were removed, and the floats were replaced.

The last engine logbook entry was undated and cited a tachometer time of 226.5 and a Hobbs time of 314. The entry stated that the carburetors were dissembled and inspected, and components were replaced with components included in 71 889 534 overhaul kits. The entry stated that the next overhaul is due at a tachometer time of 400 hours.

There is no specific overhaul time limit mentioned in any of the Rotax manuals for carburetor overhaul. Kit 71 889 534 is referred by Rotax as a Maintenance Set Carburetor. There is no specific overhaul time limit mentioned in any of the Rotax manuals. Rotax Maintenance Manual (Heavy), section 73-00-10, Page 22, under the "Insert Float Chamber and Floats" section, instruction #4 specifies fixing the float chamber with the spring clip [retention clip].

Since 2018 Pipistrel has maintained an occurrence database that contains occurrences reported directly to Pipistrel (e.g., employees, operators, pilots, etc.) and accident investigations that were communicated as per Annex 13. There is no other reference of a fire related to carburetor fuel leakage inside the database before the accident involving N413EK.

Pilot Information

Certificate:	Private	**Age:**	74,Male
Airplane Rating(s):	None	**Seat Occupied:**	Rear
Other Aircraft Rating(s):	Glider	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	None	**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	356 hours (Total, all aircraft), 220 hours (Total, this make and model), 232 hours (Pilot In Command, all aircraft), 14 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	PIPISTREL LSA SRL	**Registration:**	N413EK
Model/Series:	SINUS	**Aircraft Category:**	Airplane
Year of Manufacture:	2020	**Amateur Built:**	
Airworthiness Certificate:	Special light-sport (Special)	**Serial Number:**	1025 SFNM 912 LSA
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	December 6, 2022 100 hour	**Certified Max Gross Wt.:**	1320 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	309.7 Hrs as of last inspection	**Engine Manufacturer:**	Rotax
ELT:	Not installed	**Engine Model/Series:**	912 UL
Registered Owner:	On file	**Rated Power:**	80 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	IMT,1182 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	11:54 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	240°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.73 inches Hg	**Temperature/Dew Point:**	25°C / 8°C
Precipitation and Obscuration:			
Departure Point:	Kingsford , MI	**Type of Flight Plan Filed:**	None
Destination:	Menominee, MI (MNM)	**Type of Clearance:**	VFR
Departure Time:		**Type of Airspace:**	Class E

Airport Information

Airport:	Ford Airport IMT	**Runway Surface Type:**	
Airport Elevation:	1182 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	On-ground
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	45.818361,-88.114556(est)

Administrative Information

Investigator In Charge (IIC):	Gallo, Mitchell
Additional Participating Persons:	Michael Matthews; Federal Aviation Administration, Grand Rapids FSDO; Grand Rapids, MI Vincent Van Hasselt ; Pipistrel; Ajdovščina Jordan Paskevich; Rotech Flight Safety Inc.; Vernon B.C
Original Publish Date:	March 28, 2024
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=107115