Aviation Investigation Final Report

Location:	Helena, Montana	**Accident Number:**	SEA02LA074
Date & Time:	April 20, 2002, 12:30 Local	**Registration:**	N959D
Aircraft:	Stinson 108-2	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	3 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that shortly after applying power for takeoff, the airplane started to track left of runway centerline. During his attempts to correct the situation, the airplane's right main wheel assembly and right landing gear strut collapsed. Post-accident examination of the wheel assembly and tire installed on the accident airplane revealed that the outboard wheel subassembly fractured in multiple locations along the bead seat ring. Multiple fractures were observed in the inboard wheel subassembly, and the brake disc had partially separated from the wheel. The Type Certificate Data Sheet for the airplane lists multiple approved wheel-brake assemblies for the aircraft. The wheel assembly found on the airplane is not listed as one of the approved installations, and the wheel assembly was not approved for use with tires larger than size 7.00-6. The accident airplane was equipped with 8.00-6 size tires. The airplane's last inspection, an annual inspection, was performed on March 7, 2002.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Fracture of the left main wheel assembly during the takeoff roll. Factors include the use of a wheel assembly not approved for the accident airplane, and the use of an oversized tire.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: TAKEOFF - ROLL/RUN

Findings
1. (C) LANDING GEAR,WHEEL - FRACTURED
2. (F) LANDING GEAR,WHEEL - UNAPPROVED
3. (F) LANDING GEAR,TIRE - OTHER

Occurrence #2: LOSS OF CONTROL - ON GROUND/WATER
Phase of Operation: TAKEOFF - ROLL/RUN

Findings
4. AIRCRAFT CONTROL - NOT SUCCESSFUL - PILOT IN COMMAND

Occurrence #3: MAIN GEAR COLLAPSED
Phase of Operation: TAKEOFF - ROLL/RUN

Factual Information

On April 20, 2002, about 1230 mountain daylight time, a tail-wheel equipped Stinson 108-2, N959D, experienced a right main gear collapse while on takeoff roll at the Helena Regional Airport, Helena, Montana. The commercial pilot and the two passengers aboard the airplane were not injured, however, the airplane sustained substantial damage. The Title 14, CFR Part 91personal flight was being operated in visual meteorological conditions, and no flight plan was filed.

The pilot reported that he was departing from runway 34, and that shortly after applying power for takeoff, the airplane started to track left of runway centerline. During his attempts to correct the situation, the airplanes right main wheel assembly and right landing gear strut collapsed, resulting in substantial damage to the firewall and right aileron.

Post-accident examination of the Cleveland wheel assembly (model 40-113X), and tire (McCreary size 8.00-6), installed on the accident airplane, revealed that the outboard wheel subassembly fractured in multiple locations along the bead seat ring. Multiple fractures were observed in the inboard wheel subassembly, and the brake disc had partially separated from the wheel.

The Type Certificate Data Sheet (TCDS), number A-767, for the Univair (Stinson) 108-2, lists multiple approved wheel-brake assemblies for the airplane. The Cleveland 40-113X wheel assembly is not listed as one of the approved installations. A representative from Parker Hannifin Corporation, Aircraft Wheel and Brake Division (Cleveland), also reported that the accident wheel assembly was approved for use with 6.00-6 and 7.00-6 sized tires, but not with 8.00-6 sized tires.

Reviews of the maintenance records for the accident airplane indicate that the wheel assembly was installed on August 1, 1991. The records also indicate that the airplane's last inspection, an annual inspection, was performed on March 7, 2002.

Pilot Information

Certificate:	Commercial	**Age:**	57,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	February 5, 2002
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	March 13, 2002
Flight Time:	561 hours (Total, all aircraft), 14 hours (Total, this make and model), 561 hours (Pilot In Command, all aircraft), 14 hours (Last 90 days, all aircraft), 14 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Stinson	**Registration:**	N959D
Model/Series:	108-2	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	2959
Landing Gear Type:	Tailwheel	**Seats:**	4
Date/Type of Last Inspection:	March 7, 2002 Annual	**Certified Max Gross Wt.:**	2959 lbs
Time Since Last Inspection:	14 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1835 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	O-360
Registered Owner:	Robert J. Benjamin	**Rated Power:**	180 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:	KHLN,3874 ft msl	**Distance from Accident Site:**	
Observation Time:	12:53 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	170°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.95 inches Hg	**Temperature/Dew Point:**	9°C / -10°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Helena, MT (HLN)	**Type of Flight Plan Filed:**	None
Destination:	Helena, MT (HLN)	**Type of Clearance:**	VFR
Departure Time:	12:30 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	HELENA REGIONAL HLN	**Runway Surface Type:**	Asphalt
Airport Elevation:	3874 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	34	**IFR Approach:**	None
Runway Length/Width:	2980 ft / 75 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	2 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 None	**Latitude, Longitude:**	47.980094,-110.799949(est)

Administrative Information

Investigator In Charge (IIC):	HOGENSON, DENNIS
Additional Participating Persons:	Gerald L Byrd; FAA; Helena, MT
Original Publish Date:	February 25, 2003
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=54569