



# Aviation Investigation Final Report

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

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## 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

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Occurrence #2: LOSS OF CONTROL - ON GROUND/WATER

Phase of Operation: TAKEOFF - ROLL/RUN

### Findings

4. AIRCRAFT CONTROL - NOT SUCCESSFUL - PILOT IN COMMAND

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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 91 personal 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 airplane's 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

<b>Certificate:</b>	Commercial	<b>Age:</b>	57, Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 3 Valid Medical-w/ waivers/lim	<b>Last FAA Medical Exam:</b>	February 5, 2002
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	March 13, 2002
<b>Flight Time:</b>	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

<b>Aircraft Make:</b>	Stinson	<b>Registration:</b>	N959D
<b>Model/Series:</b>	108-2	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	2959
<b>Landing Gear Type:</b>	Tailwheel	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	March 7, 2002 Annual	<b>Certified Max Gross Wt.:</b>	2959 lbs
<b>Time Since Last Inspection:</b>	14 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	1835 Hrs as of last inspection	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	O-360
<b>Registered Owner:</b>	Robert J. Benjamin	<b>Rated Power:</b>	180 Horsepower
<b>Operator:</b>		<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KHLN,3874 ft msl	<b>Distance from Accident Site:</b>	
<b>Observation Time:</b>	12:53 Local	<b>Direction from Accident Site:</b>	
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	4 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	170°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29.95 inches Hg	<b>Temperature/Dew Point:</b>	9°C / -10°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Helena, MT (HLN )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Helena, MT (HLN )	<b>Type of Clearance:</b>	VFR
<b>Departure Time:</b>	12:30 Local	<b>Type of Airspace:</b>	Class D

## Airport Information

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

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	2 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	3 None	<b>Latitude, Longitude:</b>	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.nts.gov/Docket?ProjectID=54569>

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The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).