



# Aviation Investigation Final Report

<b>Location:</b>	BILLINGS, Montana	<b>Accident Number:</b>	SEA99LA103
<b>Date &amp; Time:</b>	July 1, 1999, 14:45 Local	<b>Registration:</b>	N3513A
<b>Aircraft:</b>	Piper PA-22	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	2 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

The pilot reported that upon touchdown the aircraft began to drift left, and right rudder was applied to correct with no effect. As the drift continued, the pilot applied right brake, increasing brake pressure until he 'was pushing against the seat.' The aircraft continued to veer left, tightening its turn radius until it had rotated more than 180 degrees counter-clockwise. During the rotation, the aircraft settled to the left in line with the runway lights and came to a stop. Post-crash examination by a certified mechanic revealed that the left main landing gear shock strut tube had separated at its attach point to the left main wheel assembly. This would have allowed the release of the left main landing gear, permitting it to pivot into a flat (collapsed) position.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The separation of the left main landing gear shock strut for undetermined reasons.

### Findings

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

#### Findings

1. (C) LANDING GEAR,MAIN GEAR SHOCK ABSORBING STRUT - SEPARATION
2. (C) REASON FOR OCCURRENCE UNDETERMINED

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Occurrence #2: GEAR COLLAPSED  
Phase of Operation: LANDING - ROLL

## Factual Information

On July 1, 1999, approximately 1445 mountain daylight time, a tailwheel equipped Piper PA-22, N3513A, registered to and being flown by a private pilot, was substantially damaged during the collapse of the left main landing gear on landing rollout at the Billings International Airport, Billings, Montana. The pilot and passenger were uninjured. Visual meteorological conditions existed, and no flight plan had been filed. The flight, which was personal, was to have been operated under 14CFR91, and originated from Helena, Montana, at 1234.

The pilot reported that upon touchdown on runway 28R the aircraft began to drift left, and right rudder was applied to correct with no effect. As the drift continued, the pilot applied right brake, increasing brake pressure until he "was pushing against the seat." The aircraft continued to veer left, tightening its turn radius until it had rotated more than 180 degrees counter-clockwise. During the rotation, the aircraft settled to the left in line with the runway lights and came to a stop. The pilot and passenger exited and noted the left main landing gear separated from its bungee (shock strut,) but still attached to the airframe.

Post-crash examination by an IA certified mechanic revealed that the left main landing gear shock strut tube had separated at its attach point to the left main wheel assembly (refer to DIAGRAM I). This would have allowed the release of the left main landing gear, permitting it to pivot into a flat (collapsed) position.

### Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	49, 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>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 1 Valid Medical--no waivers/lim.	<b>Last FAA Medical Exam:</b>	January 2, 1998
<b>Occupational Pilot:</b>	UNK	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	569 hours (Total, all aircraft), 400 hours (Total, this make and model), 520 hours (Pilot In Command, all aircraft), 80 hours (Last 90 days, all aircraft), 63 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Piper	<b>Registration:</b>	N3513A
<b>Model/Series:</b>	PA-22 PA-22	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	22-1785
<b>Landing Gear Type:</b>	Tailwheel	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	August 8, 1998 Annual	<b>Certified Max Gross Wt.:</b>	1950 lbs
<b>Time Since Last Inspection:</b>	99 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	2480 Hrs	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	O-290-D2
<b>Registered Owner:</b>	CHADWICK, THOMAS, K.	<b>Rated Power:</b>	135 Horsepower
<b>Operator:</b>		<b>Operating Certificate(s) Held:</b>	None
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	BIL ,3649 ft msl	<b>Distance from Accident Site:</b>	
<b>Observation Time:</b>	14:56 Local	<b>Direction from Accident Site:</b>	
<b>Lowest Cloud Condition:</b>	Scattered / 6500 ft AGL	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	8 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	180°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29 inches Hg	<b>Temperature/Dew Point:</b>	24°C / 4°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>	(BIL )	<b>Type of Clearance:</b>	VFLF
<b>Departure Time:</b>	12:34 Local	<b>Type of Airspace:</b>	Class C

## Airport Information

<b>Airport:</b>	BILLINGS LOGAN INTERNATIO BIL	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	3485 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	28R	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	10528 ft / 150 ft	<b>VFR Approach/Landing:</b>	Full stop;Traffic pattern

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	1 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	2 None	<b>Latitude, Longitude:</b>	45.649848,-108.380798(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Mccreary, Steven
<b>Additional Participating Persons:</b>	DON PAUL; HELENA , MT
<b>Original Publish Date:</b>	August 10, 2000
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=46731">https://data.nts.gov/Docket?ProjectID=46731</a>

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