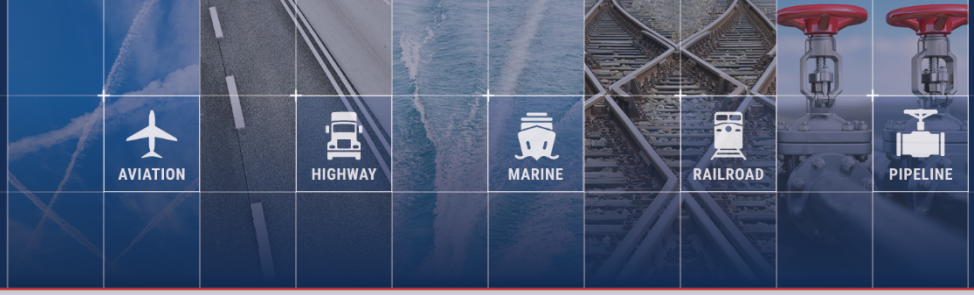

Aviation Investigation Final Report

Location:	Prescott, Arizona	**Accident Number:**	WPR24LA061
Date & Time:	December 26, 2023, 12:21 Local	**Registration:**	N29TT
Aircraft:	Glasair SH2	**Aircraft Damage:**	Substantial
Defining Event:	Sys/Comp malf/fail (non-power)	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

When the airplane's tailwheel touched the ground during landing, the airplane immediately swerved and ground looped, causing substantial damage to the fuselage due to sideloads on the landing gear. The weather conditions were not a factor, and examination revealed that the tailwheel was jammed 45° relative to the direction of travel.

Further examination revealed that the tailwheel assembly locking mechanism was significantly worn and had been incorrectly constructed, so a positive lock was not possible. Under this condition, with light side loads as are often encountered during landing, the tailwheel could unlock and be pushed into an over center position. This resulted in the airplane aggressively swerving as observed.

Probable Cause and Findings

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

Loss of directional control during landing due to an improperly constructed and maintained tailwheel locking assembly.

Findings

Aircraft	Nose/tail landing gear - Fatigue/wear/corrosion
Aircraft	Nose/tail landing gear - Incorrect service/maintenance
Aircraft	Directional control - Attain/maintain not possible
Personnel issues	Scheduled/routine maintenance - Maintenance personnel
Personnel issues	Installation - Maintenance personnel

Factual Information

History of Flight

Landing-flare/touchdown	Sys/Comp malf/fail (non-power) (Defining event)
Landing-flare/touchdown	Loss of control on ground

On December 26, 2023, about 1221 mountain standard time, an experimental amateur-built Glasair SH2, N29TT, was substantially damaged when it was involved in an accident near Prescott, Arizona. The pilot was uninjured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that, after an uneventful wheel landing, he held the tail off the ground until the airplane had decelerated to about 30 mph. As soon as the tailwheel touched the ground, the airplane swung hard to the right, ground looped, and came to rest on the runway edge.

The airplane sustained substantial damage to the forward left fuselage, which had buckled and delaminated behind the firewall and just above the left main landing gear leg. Postaccident examination revealed that the tailwheel was jammed at a 45° angle to the left.

The airplane was equipped with a free-castering tailwheel, designed to be locked in the straight position during takeoff and landing. It was controlled by a lever in the cabin that was connected via a cable to a spring-loaded locking arm in the tailwheel assembly. The locking arm, when activated, dropped down into a slot cut into the upper plate of the tailwheel trailing arm. The plate was a steel segment of about 90° arc and welded to the tailwheel arms. The pilot reported that, in accordance with the airplane's operating instructions, he locked the tailwheel straight during takeoff with the cabin control and confirmed it was locked before landing.

Postaccident examination revealed that both the cabin control and locking arm were in the locked position, but the tailwheel was jammed about the 45° to the left, rather than straight. Further examination revealed that the locking arm and associated plate slot were worn, and the locking spring had limited tension, such that with light force the tailwheel could be moved out of the straight position and jammed over center as the locking arm dropped down against the outer edges of the locking plate (see figure 1).

Figure 1. Tailwheel in the overcenter position. Arrow indicates where the locking arm has dropped down against the outer edges of the locking plate.

The construction plans specified that the control cable should be routed directly from the locking arm to a phenolic guide in the vertical fin shear web. However, the cable was routed from the locking arm down to a set of four cable ties mounted to the tailwheel strut (see figure 2).

Figure 2. Tailwheel in the straight position; note the cable ties in top left restricting free movement of the locking cable.

Pilot Information

Certificate:	Commercial	**Age:**	53,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	4-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	December 16, 2021
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	December 9, 2023
Flight Time:	2991 hours (Total, all aircraft), 33 hours (Total, this make and model), 2930 hours (Pilot In Command, all aircraft), 20 hours (Last 90 days, all aircraft), 7 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Glasair	**Registration:**	N29TT
Model/Series:	SH2	**Aircraft Category:**	Airplane
Year of Manufacture:	1986	**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	451
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	October 5, 2023 Condition	**Certified Max Gross Wt.:**	1329 lbs
Time Since Last Inspection:	7 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1134.1 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	IO-320-E2A
Registered Owner:	On file	**Rated Power:**	150 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:	KPRC,3178 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	12:38 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	320°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.17 inches Hg	**Temperature/Dew Point:**	8°C / -12°C
Precipitation and Obscuration:			
Departure Point:	Safford, AZ (SAD)	**Type of Flight Plan Filed:**	None
Destination:	Prescott, AZ	**Type of Clearance:**	None
Departure Time:	11:11 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	PRESCOTT RGNL - ERNEST A LOVE FLD PRC	**Runway Surface Type:**	Asphalt
Airport Elevation:	5045 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	03R/21L	**IFR Approach:**	None
Runway Length/Width:	7619 ft / 150 ft	**VFR Approach/Landing:**	Full stop

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	34.65483,-112.41922(est)

Administrative Information

Investigator In Charge (IIC):	Simpson, Eliott
Additional Participating Persons:	John Schroeder; FAA FSDO; Scottsdale, AZ
Original Publish Date:	July 24, 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=193576