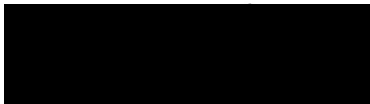




Continental Motors

ENGINE FIELD INSPECTION REPORT

ENGINE MODEL	E-185-3
ENGINE SERIAL NUMBER	5570D-9-3
AIRCRAFT MAKE & MODEL	Navion A
AIRCRAFT SERIAL NUMBER	NAV-4-1900
AIRCRAFT REGISTRATION	N4900K
FILE NUMBER	14-194

NAME	SIGNATURE	DATE
Kurt Gibson		11/21/2014

Report Issue Date: 07/2014

Revision Date: 09/2014

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GENERAL INFORMATION

EXAMINATION		ACCIDENT DATA	
DATE	10/22/2014	NTSB ACCIDENT #	ERA14LA425
FACILITY	Atlanta Air Recovery	NTSB INVESTIGATOR	Brian Rayner
ADDRESS	1146 Uniform Rd Griffin, GA 30224	FAA INVESTIGATOR	
		ACCIDENT DATE	09/06/2014
		ACCIDENT LOCATION	Rock Hill, SC

ENGINE INFORMATION

ENGINE POSITION	Single Engine
TOTAL TIME	3262.9 (time taken from pilot's NTSB form 6120.1)
TIME SOH	128.1 (time taken from pilot's NTSB form 6120.1)
TYPE & TIME SLI	74.6 (time taken from pilot's NTSB form 6120.1)
BUILD DATE	Unknown
IN SERVICE DATE	Unknown

Significant logbook information:

The logbooks were not provided to the investigator at the time of this report's writing.

Report Summary:

Search Code(s):

There were no anomalies noted that would have prevented normal operation or production or rated horsepower.

Disposition of engine following exam:

Engine remained at Atlanta Air Recovery.

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NAME	Kurt Gibson	NAME	Brian Rayner
ADDRESS	Mobile, Alabama	ADDRESS	NTSB Eastern Region
ORGANIZATION	Continental Motors	ORGANIZATION	NTSB
PHONE		PHONE	
NAME		NAME	
ADDRESS		ADDRESS	
ORGANIZATION		ORGANIZATION	
PHONE		PHONE	
NAME		NAME	
ADDRESS		ADDRESS	
ORGANIZATION		ORGANIZATION	
PHONE		PHONE	

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EXTERNAL INSPECTION OF ENGINE

The engine remained attached to the airframe through the engine mounts, hoses, control cables and wires. The engine sustained some impact damage to the exhaust system and the oil cooler. It was noted that there was no dataplate attached to the engine crankcase. The two blade, variable pitch propeller remained attached to the crankshaft and sustained damage consistent with impact damage. One blade displayed chordwise scratches, aft bending deformation near the blade tip, and some tip curling. The other propeller blade displayed aft bending deformation, and leading edge polishing and chordwise scratches near the propeller tip. All six cylinders remained attached to the engine and were undamaged.

Both of the magnetos remained attached to their respective installation point and were undamaged. The ignition harness remained attached to both of the magnetos and to each of the spark plugs. The ignition harness was undamaged. All of the spark plugs remained installed in their respective cylinders and were undamaged.

The fuel pump remained attached to its respective installation point and was undamaged. It was noted that the fuel pump inlet and the fuel pump pressure indicator lines were disconnected at the firewall prior to this investigators arrival. The pressure carburetor remained attached to the induction system and sustained minor damage consistent with impact damage.

The exhaust system remained attached to the engine and sustained damage consistent with impact damage to the outflow pipe. The induction system remained attached to the engine and was undamaged. There were no anomalies noted with the intake or exhaust systems.

ENGINE FIELD INSPECTION REPORT

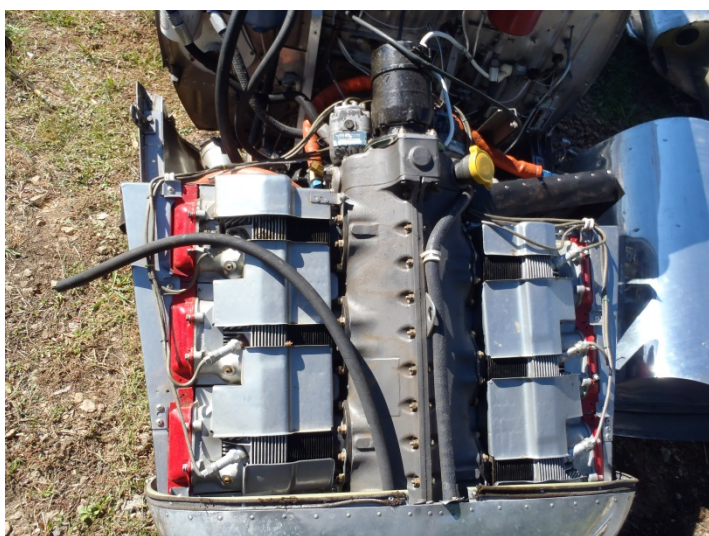
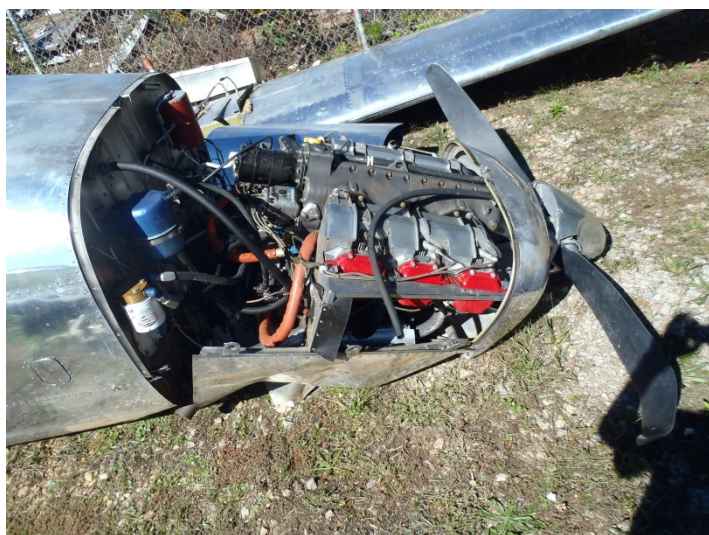
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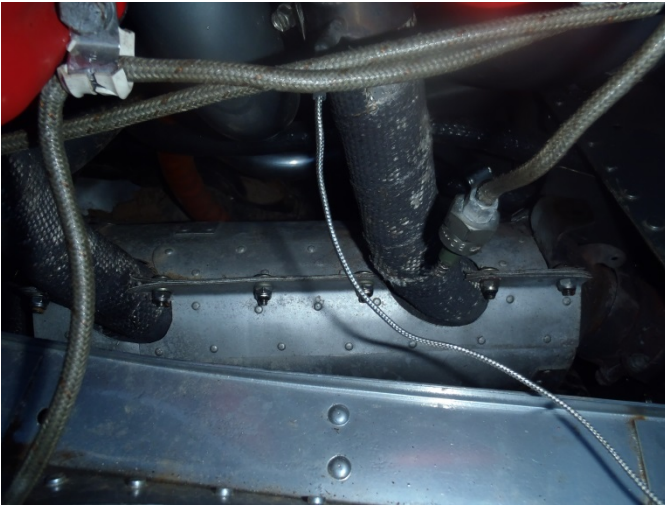
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ENGINE TEARDOWN AND COMPONENT EXAMINATION

EXHAUST SYSTEM

Condition:

The exhaust system remained attached to the engine and sustained some damage consistent with impact damage. There were no anomalies noted with the exhaust system.



INDUCTION SYSTEM

Condition:

The induction system remained attached to the engine and was undamaged. There were no signs of induction leaks or other anomalies noted with the induction system

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PAGE 7 of 22**IGNITION SYSTEM****LEFT
MAGNETO**

Manufacturer: Bendix

P/N: 10-51365-43

S/N: 645126

Condition:

The magneto remained attached to its respective installation point and was undamaged. It was noted that during crankshaft rotation the impulse couplings engaged and the magneto was capable of producing a spark for all 6 spark plugs.

**RIGHT
MAGNETO**

Manufacturer: Bendix

P/N: 10-51365-43

S/N: 651074

Condition:

The magneto remained attached to its respective installation point and was undamaged. It was noted that during crankshaft rotation the impulse couplings engaged and the magneto was capable of producing a spark for all 6 spark plugs.



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IGNITION HARNESS	Manufacturer: Not Marked	P/N: Not Marked	S/N: Not Marked
Condition:	The ignition harness remained attached to both of the magnetos and to all of the spark plugs. The ignition harness was undamaged and it was noted that during magneto impulse coupling engagement the ignition harness was capable of conducting a spark from each magneto to all of the spark plugs.		



SPARK PLUGS	Manufacture: Mix of Autolite and Champion	P/N: Champion REM40E and Autolite UREM40E
Condition:	All of the spark plugs remained installed in their respective cylinders and were undamaged. The spark plugs were removed and all of the spark plugs displayed normal operating signatures when compared to Champion Aviation Service Manual AV6-R and Autolite L-1710A Manual. It was noted that during magneto impulse coupling engagement all of the spark plugs were capable of conducting a spark between the ground and center electrodes.	



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FUEL SYSTEM

FUEL PUMP

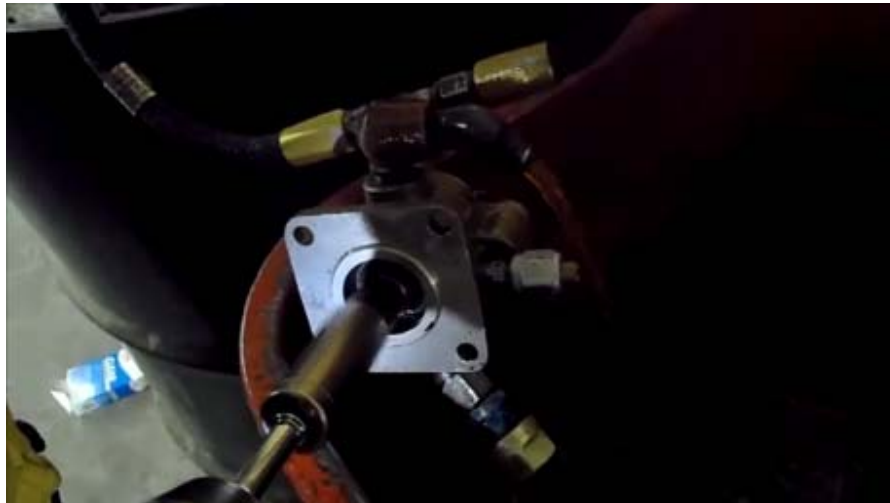
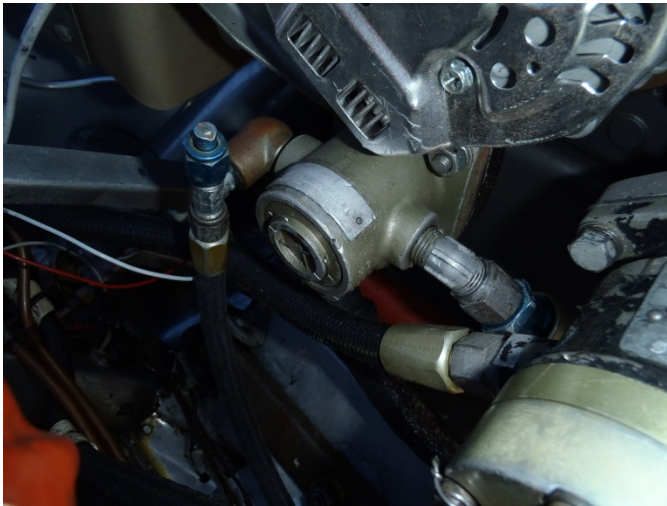
Manufacturer: Lear Romeo

P/N: RD7790N8

S/N: F-7437

Condition:

The fuel pump remained attached to its respective installation point and was undamaged. It was noted that the fuel pump inlet and fuel pressure indication fuel lines were disconnected prior to the investigator's examination. The fuel pump was removed and the fuel pump inlet line was submersed in a solvent tank; the fuel pump drive was driven by an electric drill and it was noted the fuel pump was capable of pumping the solvent. There were no anomalies noted with the fuel pump.



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CARBURETOR

Manufacturer: Bendix

P/N: P35C

S/N: 734609

Condition:

The carburetor remained attached to the intake system and sustained some damage consistent with impact damage. All of the fuel lines and control cables were noted to be secure and control cable continuity was established by moving the controls at the throttle quadrant. The carburetor was removed from the engine and disassembled for inspection. All of the internal components displayed normal operating signatures. It was noted that the fuel screen had a small amount of organic material consistent with dirt and grass contained within the screen; however, the screen was not blocked and there was no foreign material found in any of the carburetor chambers. Compressed air was blown through the final chamber of the carburetor to check the carburetor jets for blockages; there were no blockages noted. There were no further anomalies noted with the carburetor.



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PAGE 12 of 22**LUBRICATION SYSTEM****OIL SUMP****Condition:**

The oil sump remained attached to the engine and the visible portions of the sump were undamaged. There were no anomalies noted.

**OIL PICK-UP
TUBE & SCREEN****Condition:**

Due to the type of inspection performed the oil pick-up tube and screen was not observed.

OIL PUMP**Condition:**

Due to the type of inspection performed the oil pump was not observed.

OIL FILTER

Manufacturer: Champion

P/N: CH48108-1

Condition:

The aircraft was equipped with a remote oil filter system. The oil filter remained secure and there were no signs of leaks. Due to the type of inspection performed the filter was not removed from the aircraft.



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OIL COOLER	Manufacturer: Inaccessible	P/N: Inaccessible	S/N: Inaccessible
Condition:	The oil cooler remained attached to its respective installation point and sustained damage consistent with impact damage caused by the propeller governor striking the oil cooler. There were no anomalies noted.		



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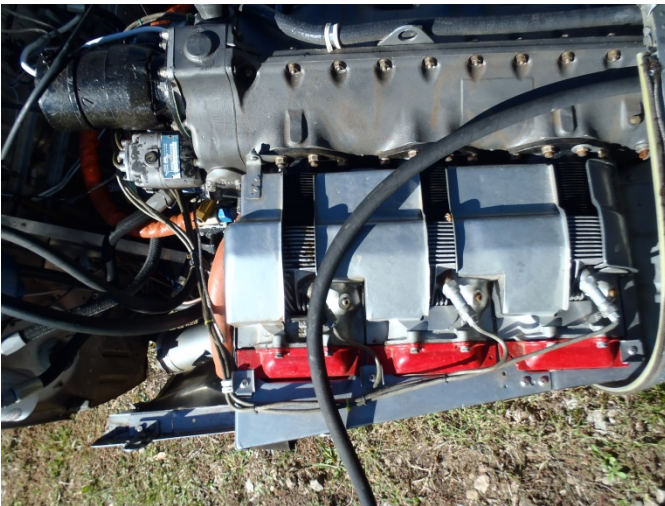
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CYLINDERS

CYLINDERS	P/N: Inaccessible	S/N: Inaccessible	
Condition:	All of the cylinders remained attached to their respective installation points and were undamaged. The cylinders were inspected using a borescope; the #1 cylinder bore displayed some corrosion, the remaining cylinder bores were free of anomalies. The valve heads and piston heads were inspected using the borescope; the components displayed normal operating and combustion signatures. The crankshaft was rotated by hand and it was noted that all of the cylinders displayed good thumb compression and suction.		



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GUIDES****Condition:**

All of the valve heads were inspected using a borescope; all of the valves displayed normal operating and combustion signatures. The valves operated normally during crankshaft rotation. There were no anomalies noted with the valves.

**ROCKER ARMS AND
SHAFTS****Condition:**

The rocker arms were not visually observed due to the type of inspection performed. Operation of the rocker arms was verified by rotating the crankshaft and verifying valve movement. There were no anomalies noted with the rocker arms.

PISTONS

Piston P/N: Inaccessible

Condition:

All of the piston heads were inspected using a borescope. The piston heads displayed normal operating and combustion signatures. The pistons operated normally during crankshaft rotation. There were no anomalies noted with the pistons.

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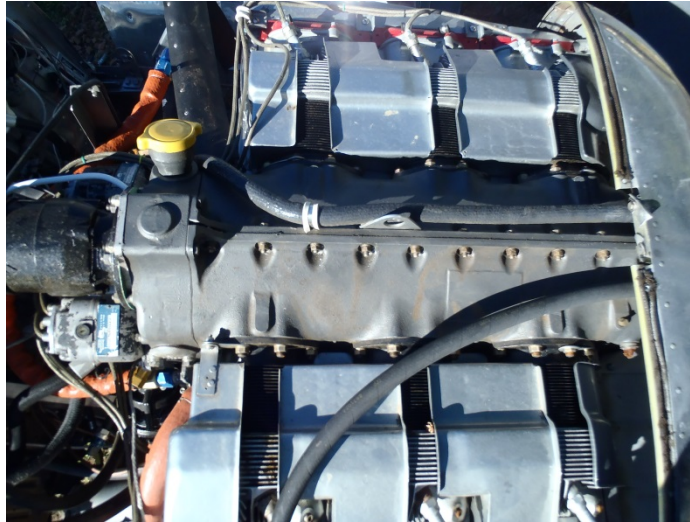
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CRANKCASE ASSEMBLY

CRANKCASE	Casting Number:	1-3-5: Inaccessible	2-4-6: Inaccessible	S/N: Inaccessible
Condition:	The crankcase was undamaged and displayed normal operating signatures. It was noted that the engine dataplate was missing from the crankcase. There were no anomalies noted that would have prevented normal operation.			



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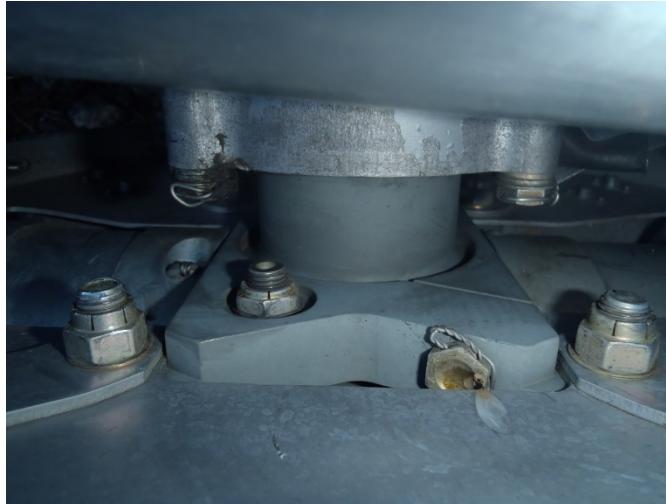
Forging: Inaccessible

S/N: Inaccessible

Heat code: Inaccessible

Condition:

The crankshaft remained intact and was capable of normal rotation. The crankshaft was rotated by hand and continuity was established between the crankshaft, camshaft, connecting rods, and associated components. There were no anomalies noted with the crankshaft.

**CONNECTING RODS**

P/N: Inaccessible

Forging or Serial Number: Inaccessible

Condition:

Operation of the connecting rods was verified by rotating the crankshaft and observing piston movement. The connecting rods operated normally.

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P/N: Inaccessible

S/N: Inaccessible

Condition:

Operation of the camshaft was verified by rotating the crankshaft and verifying valve movement. The camshaft operated normally.

**ACCESSORY
GEARS**

Condition:

Operation of the magneto accessory gears was verified by rotating the crankshaft and verifying impulse coupling engagement. The magneto drive gears operated normally.

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ACCESSORIES

STARTER

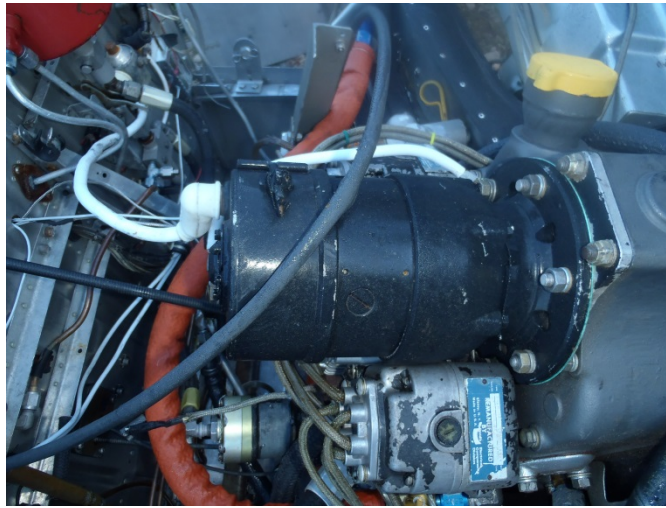
Manufacturer: Inaccessible

P/N: Inaccessible

S/N: Inaccessible

Condition:

The starter remained attached to the engine and was undamaged. There were no anomalies noted with the starter.

**ALTERNATOR**

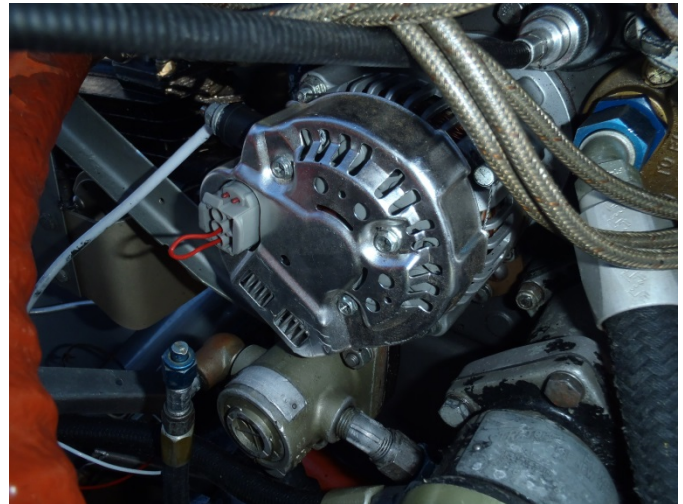
Manufacturer: Plane Power

P/N: ER14-50

S/N: ER-124203

Condition:

The alternator remained attached to its respective installation point and was undamaged. There were no anomalies noted with the alternator.



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HYDRAULIC PUMP

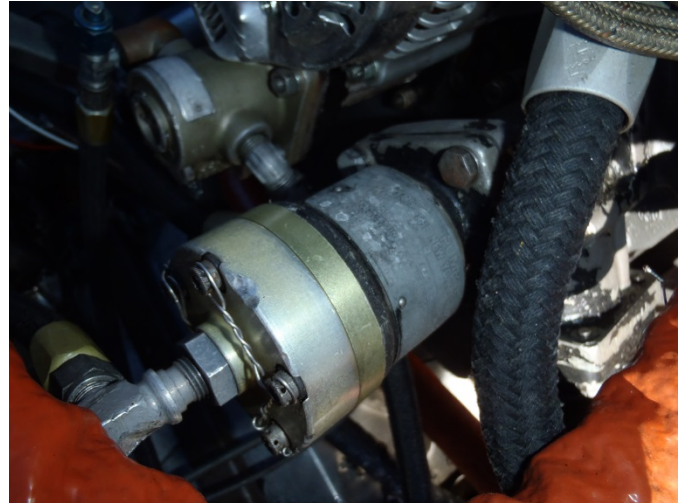
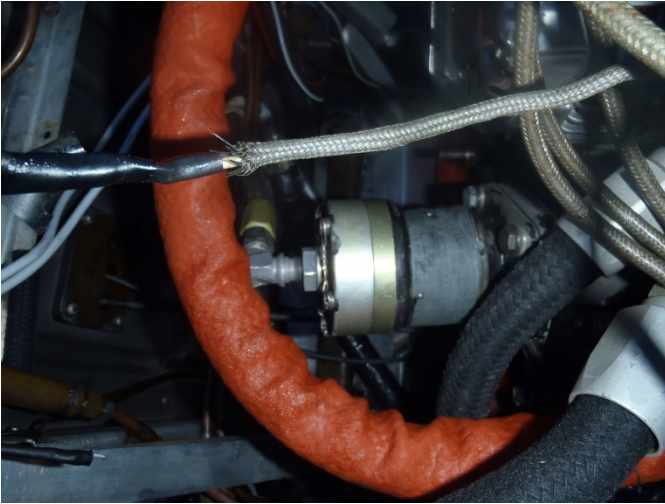
Manufacturer: Illegible

P/N: 67A025

S/N: A1210

Condition:

The engine driven hydraulic pump remained attached to the engine and was undamaged. There were no anomalies noted with the hydraulic pump.



VACUUM PUMP

Manufacturer: Inaccessible

P/N: Inaccessible

S/N: Inaccessible

Condition:

The vacuum pump remained attached to its respective installation point and was undamaged. There were no anomalies noted with the vacuum pump.



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PROPELLER

**PROPELLER
GOVERNOR**

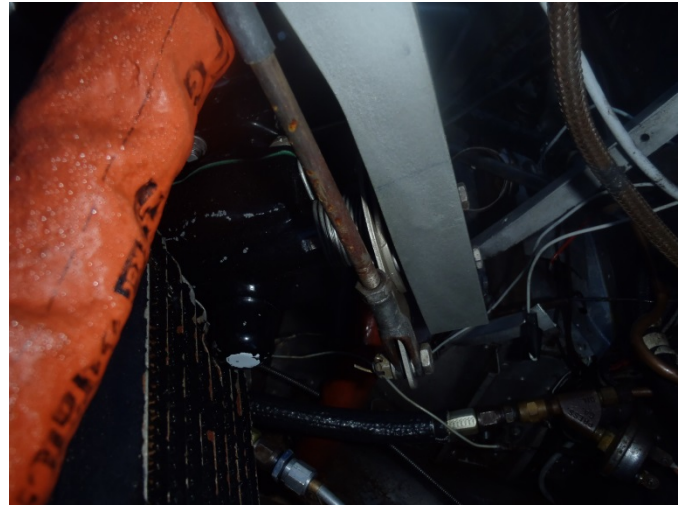
Manufacturer: Inaccessible

P/N: Inaccessible

S/N: Inaccessible

Condition:

The propeller governor remained attached to its respective installation point and sustained some damage consistent with impact damage and was impinged against the oil cooler. The propeller control cable remained secured to the propeller governor. There were no anomalies noted with the governor.



PROPELLER

Manufacturer: Hartzell

P/N: HC-A2V20-4A1

S/N: Inaccessible

Condition:

The two blade, variable pitch propeller remained attached to the crankshaft and sustained damage consistent with impact damage. One blade displayed chordwise scratches, aft bending deformation near the blade tip, and some tip curling. The other propeller blade displayed aft bending deformation, and leading edge polishing and chordwise scratches near the propeller tip.



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