



ENGINE EXAMINATION REPORT

ENGINE MODEL	IO-470-L
ENGINE SERIAL NUMBER	CS232185.R
AIRCRAFT MAKE & MODEL	Beechcraft 95-B55
AIRCRAFT SERIAL NUMBER	TC-1256
AIRCRAFT REGISTRATION	N323MT
FILE NUMBER	18-373

NAME	SIGNATURE	DATE
Kurt Gibson		07/12/2019

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GENERAL INFORMATION

EXAMINATION		ACCIDENT DATA	
DATE	06/11/2019	NTSB ACCIDENT #	ERA19LA136
FACILITY	Florida Air Recovery	NTSB INVESTIGATOR	Peter Wentz
ADDRESS	[REDACTED] [REDACTED]	FAA INVESTIGATOR	Conner McCauley
		ACCIDENT DATE	03/25/2019
		ACCIDENT LOCATION	Clewiston, Florida

ENGINE INFORMATION

ENGINE POSITION	Left
TOTAL TIME	1002.9 (hobbs hours)
TIME SOH	N/A
TYPE & TIME SLI	15.6 hobbs hours since the last annual inspection
BUILD DATE	05/24/1979
IN SERVICE DATE	07/25/1979

Significant logbook information:

The last annual inspection was performed on 12/28/2018 at a hobbs time of 1195.3; it was noted that during the annual the low and high side fuel pressures were adjusted on the fuel pump. On 11/15/2017 at a hobbs time of 1104.7 a logbook entry reported that both magnetos were replaced with new Slick magnetos and a "fuel metering value" that had been overhauled by Quality Aircraft Accessories was installed.

Report Summary:

Search Code(s):

15-12-68

There were no anomalies noted that would have prevented the engine from operating normally.

Disposition of engine following exam:

The engine remained at Florida Air Recovery in Fort Pierce, Florida

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INSPECTION WITNESSES

NAME	Kurt Gibson	NAME	Peter Wentz
ADDRESS	Mobile, Alabama	ADDRESS	Eastern Region
ORGANIZATION	Continental Aerospace Technologies	ORGANIZATION	NTSB
PHONE		PHONE	
NAME	Conner McCauley	NAME	
ADDRESS	Miramar, Florida	ADDRESS	
ORGANIZATION	FAA	ORGANIZATION	
PHONE		PHONE	
NAME		NAME	
ADDRESS		ADDRESS	
ORGANIZATION		ORGANIZATION	
PHONE		PHONE	

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The engine had been removed from the airframe prior to the examination. The engine remained attached to the airframe engine mounts and the engine displayed impact damage to the bottom, front portion of the engine; the induction tubes were crushed and one of the risers was broken and the oil sump was dented. The crankcase remained intact and there were no signs of a catastrophic internal engine failure. The three blade, constant speed propeller remained attached to the crankshaft and all three propeller blades appeared to be in the feathered position and the blades displayed minimal damage. All six cylinders remained attached to their cylinder bays and were undamaged.

Both magnetos remained attached to their installation points and were undamaged. The ignition harness was undamaged and remained secured to both magnetos as well as each spark plug. All twelve spark plugs remained installed in their cylinders and were undamaged.

The fuel pump remained attached to its installation point and was undamaged; there were no signs of fuel leaks noted around the fuel pump. The throttle and metering assembly remained attached to its installation point and was undamaged; all of the fuel lines remained secured and there were no signs of fuel leaks. The fuel manifold valve and fuel nozzles remained attached to their installation points and were undamaged; there were no signs of fuel leaks and all of the fuel lines were secure.

The exhaust system remained attached to the engine and was undamaged; there were no signs of exhaust leaks noted. The induction system displayed impact damage towards the front of the engine; the balance tube was crushed and one of the induction risers was broken. There were no signs of induction leaks noted.

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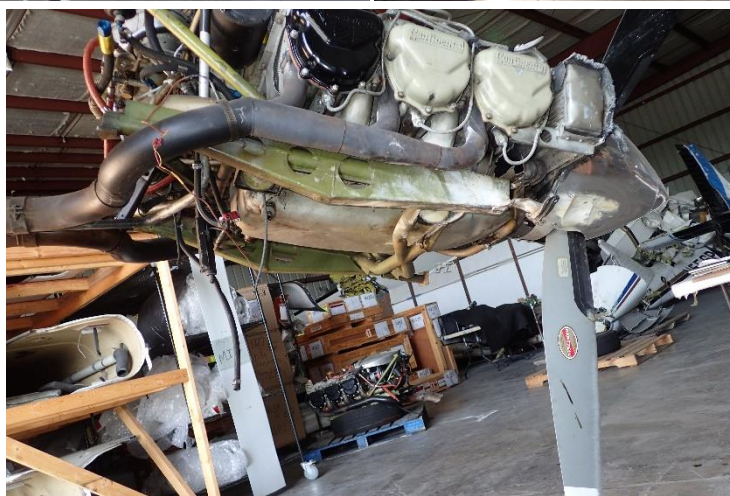
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ENGINE TEARDOWN AND COMPONENT EXAMINATION

EXHAUST SYSTEM

Condition: The exhaust system remained attached to the engine and was undamaged. There were no signs of exhaust leaks or other anomalies observed.



INDUCTION SYSTEM

Condition: The induction system remained attached to the engine and displayed impact damage concentrated to the forward portions of the induction system; the balance tube was crushed and one of the induction risers was broken. There were no signs of induction leaks noted. After the throttle and metering assembly was removed the inside of the induction risers were inspected; there were no signs of blockages noted. There were no anomalies observed.



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IGNITION SYSTEM

LEFT MAGNETO

Manufacturer: Slick

P/N: Not observed

S/N: Not observed

Condition:

The magneto remained attached to its installation point and was undamaged. During crankshaft rotation it was noted that the impulse coupling operated normally. During impulse coupling operation the magneto was capable of producing a spark to each ignition lead end in the correct order; it was noted that the magneto would fire in sync with the right magneto. There were no anomalies noted.



RIGHT MAGNETO

Manufacturer: Slick

P/N: 6310

S/N: 17010287

Condition:

The magneto remained attached to its installation point and was undamaged. During crankshaft rotation it was noted that the impulse coupling operated normally. During impulse coupling operation the magneto was capable of producing a spark to each ignition lead end in the correct order; it was noted that the magneto would fire in sync with the left magneto. There were no anomalies noted.



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IGNITION HARNESS

Manufacturer: Slick

P/N: RH: M2379, LH: M2380

S/N: Not marked

Condition:

The ignition harness remained attached to both magnetos and to each spark plug. During magneto impulse coupling operation, it was observed that each ignition lead was capable of conducting a spark to the lead end. There were no anomalies observed.



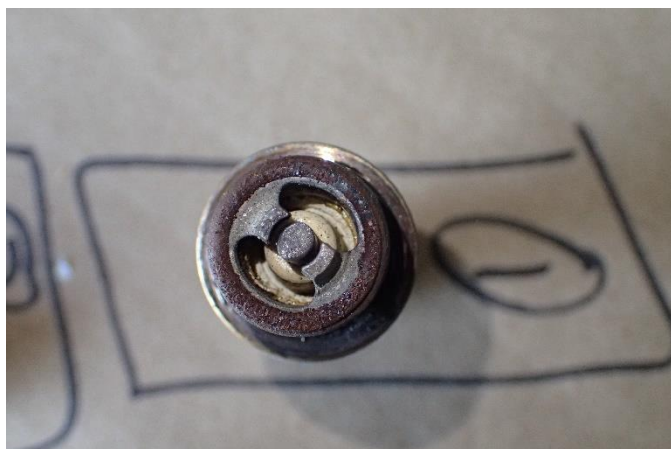
SPARK PLUGS

Manufacturer: Champion

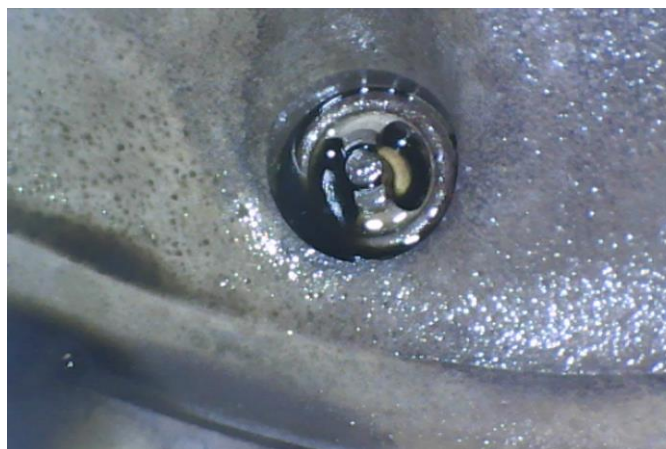
P/N: RHB32E

Condition:

All of the spark plugs remained installed in their cylinders and were undamaged. The top spark plugs were removed, and the electrodes were visually inspected; the bottom spark plug electrodes were inspected using a lighted borescope. All of the electrodes displayed normal operating and most of the spark plugs were in a normally worn out condition. There were no anomalies that would have prevented normal operation noted.



#1 Top Spark Plug



#1 Bottom Spark Plug

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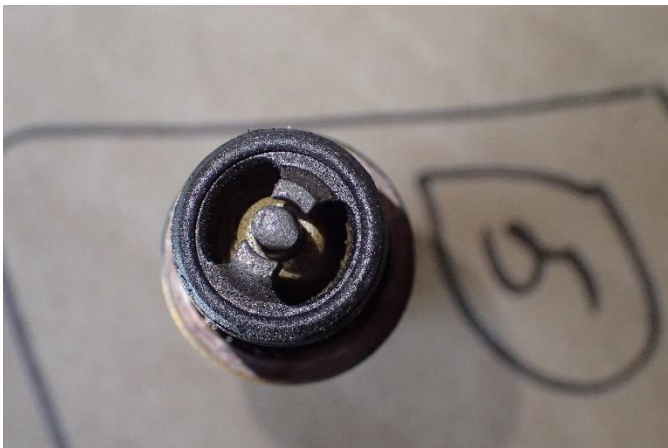
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#3 Top Spark Plug



#3 Bottom Spark Plug



#5 Top Spark Plug



#5 Bottom Spark Plug



#2 Top Spark Plug



#2 Bottom Spark Plug

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#4 Top Spark Plug



#4 Bottom Spark Plug



#6 Top Spark Plug



#6 Bottom Spark Plug

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FUEL SYSTEM

FUEL PUMP

Manufacturer: CMI

P/N: 638154-9

S/N: D057902?3

Condition:

The fuel pump remained attached to its installation point and was undamaged; all of the fuel line AN fittings on the fuel pump remained secured (the fuel inlet line and fuel vapor return line had been disconnected at the firewall prior to the examination). The fuel pump was removed, and it was noted that the fuel pump drive coupling remained intact and the drive shaft was capable of rotation. During fuel pump drive rotation the fuel pump was capable of pumping out residual fluid that was consistent with 100LL Avgas. It was noted that the fuel pump low end adjustment bolt was screwed in all the way to the jam nut.



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THROTTLE BODY METERING UNIT

Manufacturer: CMI

P/N: 625219-2

S/N: 23912

Condition:

The throttle and metering assembly remained attached to its installation point and was undamaged. The assembly was removed and it was noted both the throttle and mixture control arms remained secured to their shafts and were capable of movement; however, it was observed that the throttle control full throttle stop pin was worn down and would allow the throttle valve to move past full open. The metering assembly was disassembled, and the internal components were visually examined; the mixture and throttle metering cams and the metering plug displayed normal operating signatures (it was noted that one of the metering plug O-rings was torn which was consistent with damage from removal). The fuel inlet screen was removed and visually inspected; it was noted that there was some fibrous material within the screen; however, the screen was not blocked. It was noted that the assembly had a non-standard dataplate.



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**FUEL MANIFOLD VALVE**

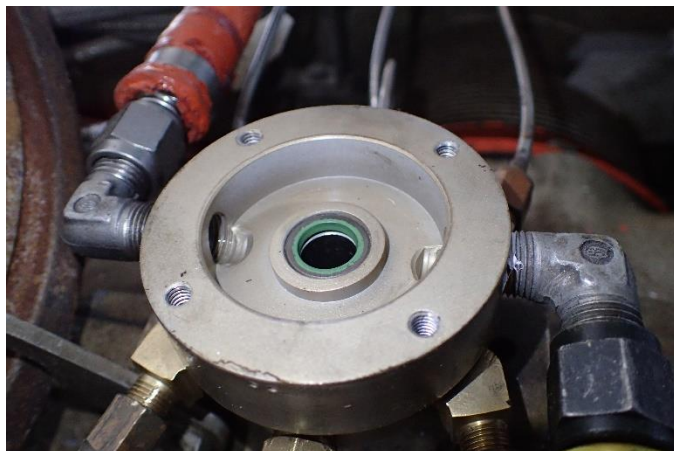
Manufacturer: CMI
Overhauled: Quality Aircraft
Accessories

P/N: 631427-3

S/N: D04791 ORC

Condition:

The fuel manifold valve remained attached to its installation point and was undamaged; all of the fuel lines were noted to be secure and there were no signs of fuel leaks around the assembly. The manifold valve was disassembled, and the internal components were visually inspected. It was noted that the fuel manifold valve did not have a screen installed. The diaphragm, plunger, and spring all showed normal operating signatures.



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FUEL NOZZLES AND LINES

Manufacturer: CMI

Position

#1

#3

#5

#2

#4

#6

Size

D12D

D12D

12D

D12D

D12D

D12D

Condition:

All of the fuel nozzles remained installed in their cylinders and were undamaged and the fuel lines were secure. The nozzles were removed and visually inspected; all of the fuel nozzles were unobstructed and displayed normal operating signatures. There were no anomalies observed.



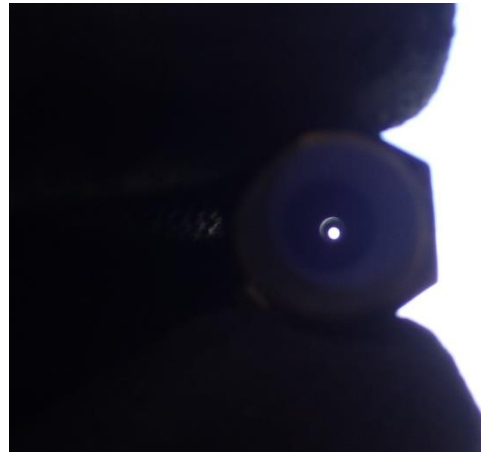
#1 Nozzle



#3 Nozzle



#5 Nozzle



#2 Nozzle

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#4 Nozzle



#6 Nozzle

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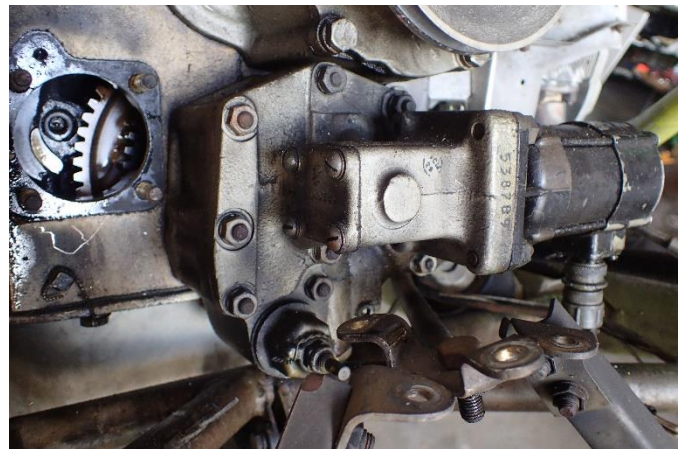
The oil sump remained attached to the engine and displayed minor impact damage in the form of dents. There were no anomalies noted.

**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:**

The oil pump remained attached to its installation point and was undamaged. During crankshaft rotation it was noted that oil would pump out of the oil pressure indication line. There were no anomalies observed.



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OIL SCREEN

Condition:

The oil screen remained secured in its installation point and was undamaged. The oil screen was removed, and the screen was visually inspected; it was noted that there was a small amount of carbon deposits and there was no metallic material noted within the screen. There were no anomalies observed.



OIL COOLER

Manufacturer: Not observed

P/N: Not observed

S/N: Not observed

Condition:

The oil cooler remained attached to its installation point and displayed minor impact damage signatures. There were no anomalies noted.



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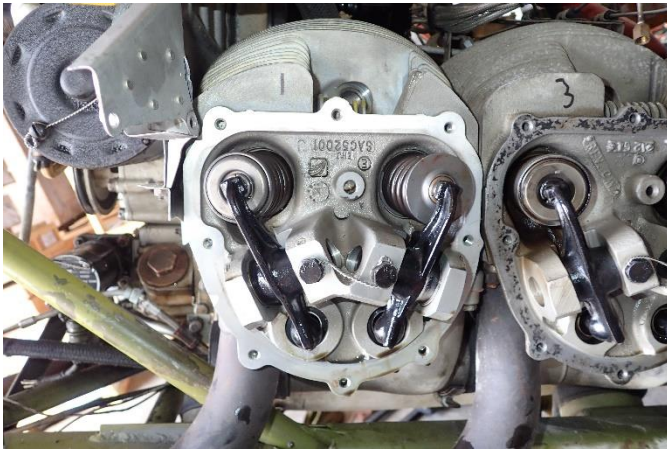
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CYLINDERS

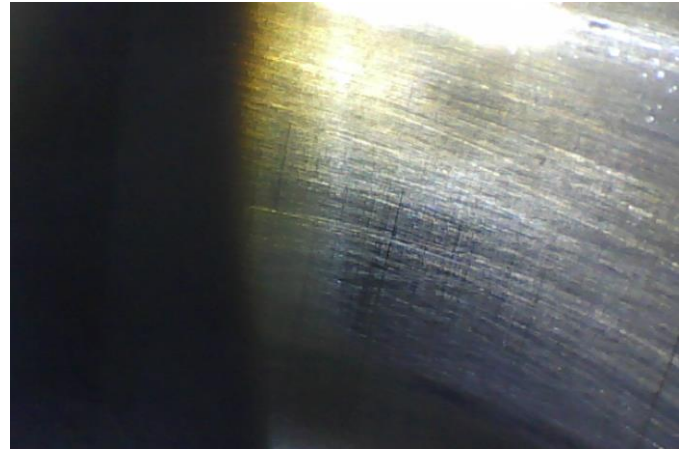
CYLINDERS

Condition:

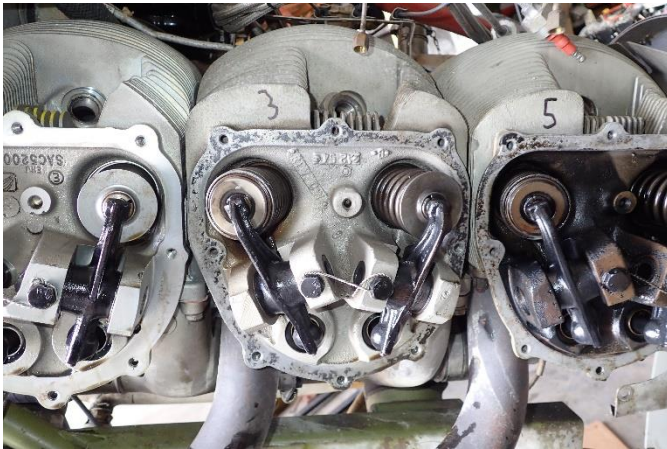
All of the cylinders remained attached to their cylinder bays and were undamaged. The cylinders were inspected using a lighted borescope; the cylinder bores, piston faces, and valve heads displayed normal operating and combustion signatures. The overhead components (valves, springs, and rocker arms) displayed normal operating and lubrication signatures. During crankshaft rotation all six cylinders displayed good thumb compression and suction and all of the rocker arms and valves operated normally.



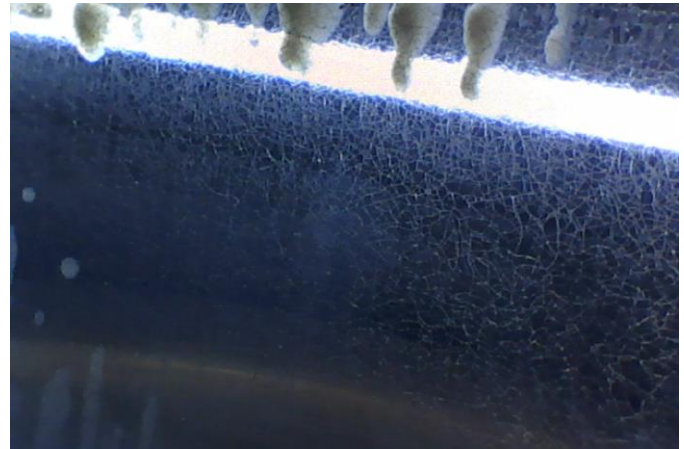
#1 Cylinder Overhead Components



#1 Cylinder Bore



#3 Cylinder Overhead Components



#3 Cylinder Bore

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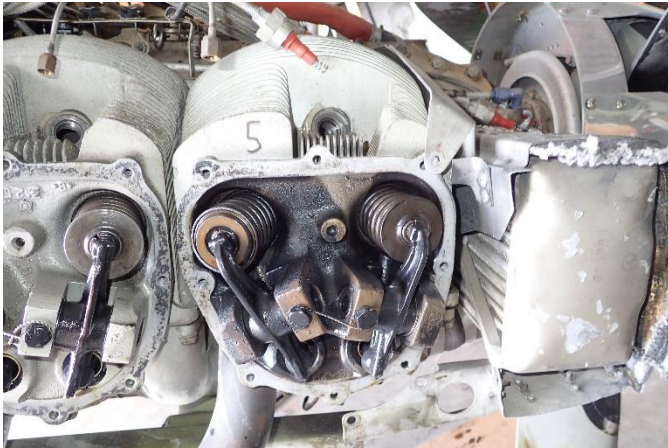
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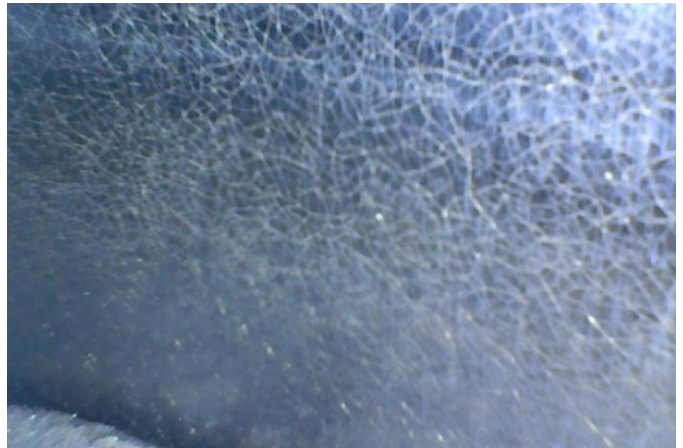
#5 Cylinder Overhead Components



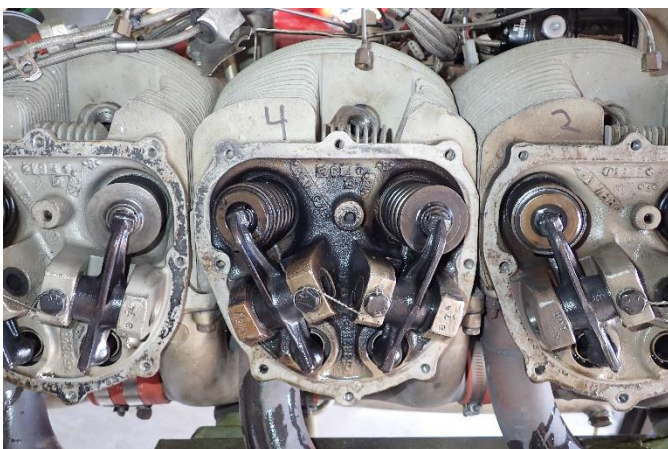
#5 Cylinder Bore



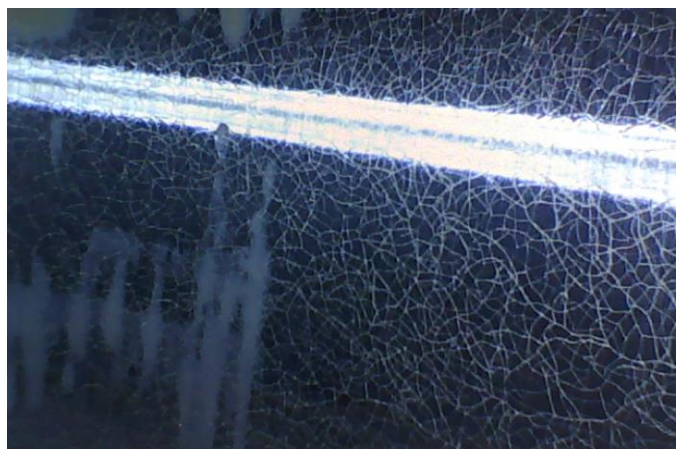
#2 Cylinder Overhead Components



#2 Cylinder Bore



#4 Cylinder Overhead Components



#4 Cylinder Bore

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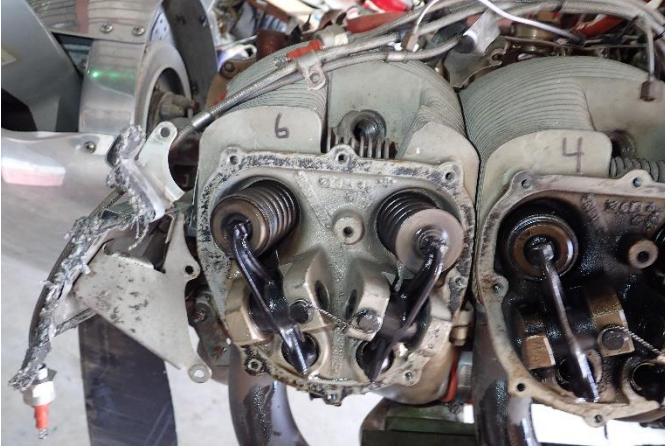
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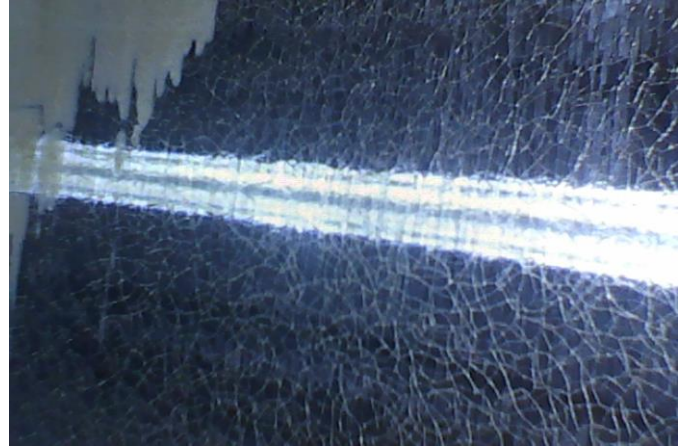
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#6 Cylinder Overhead Components



#6 Cylinder Bore

VALVES AND GUIDES

Condition:

The valve heads were inspected using a lighted borescope; the valve heads displayed normal operating and combustion signatures. The valve springs and stems displayed normal operating and lubrication signatures. During crankshaft rotation all of the valves operated normally. There were no anomalies observed.



#1 Exhaust Valve



#1 Intake Valve

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#3 Exhaust Valve



#3 Intake Valve



#5 Exhaust Valve



#5 Intake Valve



#2 Exhaust Valve



#2 Intake Valve

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#4 Exhaust Valve



#4 Intake Valve



#6 Exhaust Valve



#6 Intake Valve

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ROCKER ARMS AND SHAFTS

Condition:

All of the rocker arms remained secured to their installation points and were undamaged. The rocker arms displayed normal operating and lubrication signatures. During crankshaft rotation all of the rocker arms operated normally. There were no anomalies observed.



PISTONS

Piston P/N: 654832C (observed from the #1 piston)

Condition:

All of the piston faces were inspected using a lighted borescope; the piston faces displayed normal operating and combustion signatures. During crankshaft rotation all of the pistons operated normally. There were no anomalies observed.



#1 Piston



#3 Piston

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#5 Piston



#2 Piston



#4 Piston



#6 Piston

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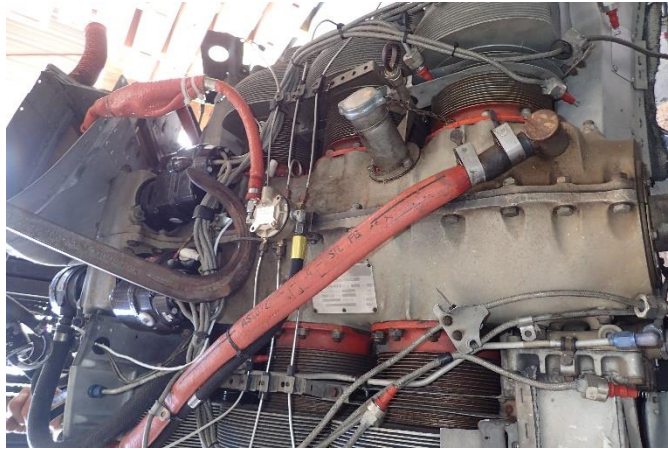
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CRANKCASE ASSEMBLY

CRANKCASE	Casting Number:	1-3-5: Not observed	2-4-6: 629258	S/N: 683
Condition:	The crankcase remained intact and was undamaged. There were no signs of a catastrophic internal engine failure observed. There were no anomalies observed.			



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Inaccessible

S/N: Not observed

Heat code: Inaccessible

Condition:

The crankshaft remained intact and was undamaged. The crankshaft was rotated manually by moving the propeller 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. All of the connecting rods operated normally.

CAMSHAFT**CAMSHAFT**

P/N: Inaccessible

S/N: Inaccessible

Condition:

Operation of the camshaft was verified by rotating the crankshaft and observing rocker arm movement. The camshaft operated normally.

**ACCESSORY
GEARS**

Condition:

Operation of the magneto drive gears was verified by rotating the crankshaft and observing magneto impulse coupling operation. The drive gears operated normally.

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ACCESSORIES

STARTER

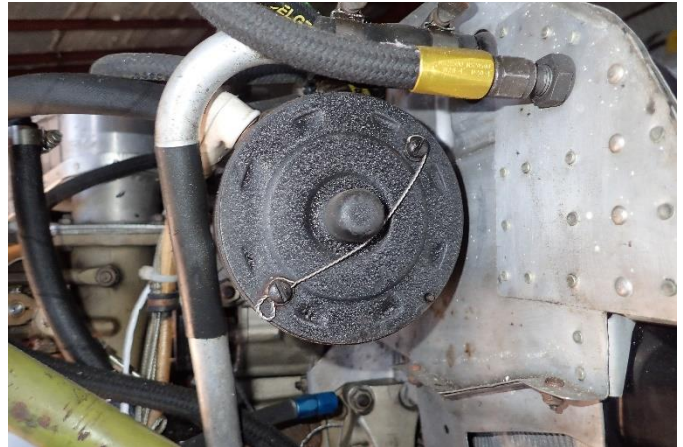
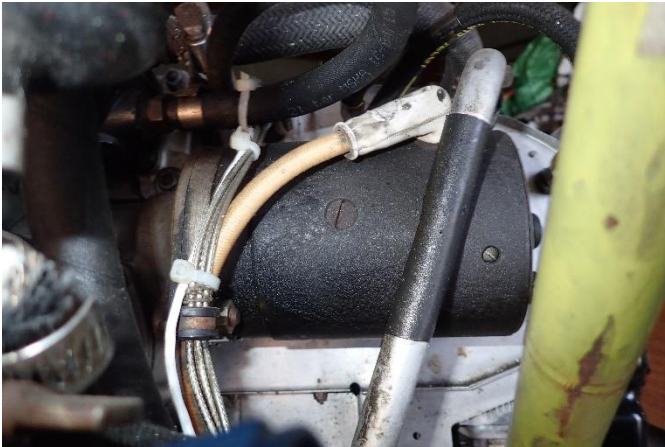
Manufacturer: Not observed

P/N: Not observed

S/N: Not observed

Condition:

The starter remained attached to the starter adapter and was undamaged. There were no anomalies observed.

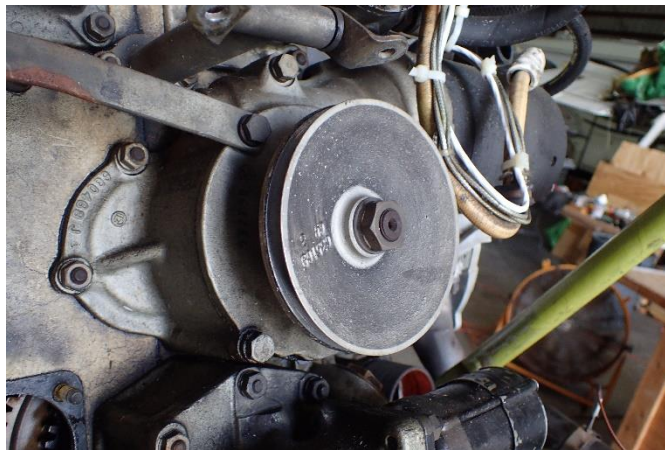


STARTER ADAPTER

P/N: 675050A2

Condition:

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



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ALTERNATOR

Manufacturer: Prestolite

P/N: ALT8403

S/N: A891019

Condition:

The alternator remained attached to its installation point and was undamaged. The alternator belt remained secured and the alternator drive was capable of rotation. There were no anomalies observed.



VACUUM PUMP

Manufacturer: Garwin

P/N: G455

S/N: 20825

Condition:

The vacuum pump remained attached to its installation point and was undamaged. There were no anomalies observed.



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PROPELLER

PROPELLER GOVERNOR

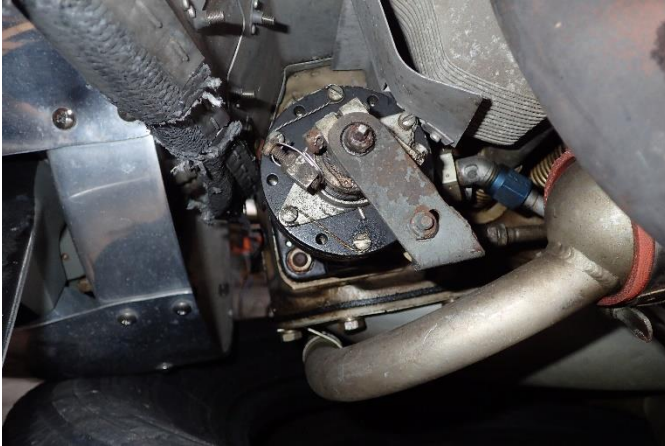
Manufacturer: Woodward

P/N: B210438

S/N: 1584611

Condition:

The governor remained attached to its installation point and was undamaged. The propeller control arm was capable of normal movement and there were no signs of oil leaks around the governor. There were no anomalies observed.



PROPELLER

Manufacturer: Hartzell

P/N: Not observed

S/N: Not observed

Condition:

The three blade, constant speed propeller remained attached to the crankshaft and appeared to be in the feathered position. All three propeller blades remained within the hub and displayed minimal damage; the propeller blade marked "C" displayed minor chordwise scratches and leading-edge polishing, the other two blades were undamaged.



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