
ROTECH FLIGHT SAFETY INC.

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INVESTIGATION REPORT

ACCIDENT INFORMATION

Date of accident:	September 27 th 2022	NTSB file number:	CEN22FA433
Location of accident:	Yankton, SD	FAA Inspector:	Todd Obritsch
Location of Investigation:	Whistler Aviation (Seward,NE)	Law Enforcement:	Yankton County Sheriff's Office (Yankton, SD)
Investigator In charge:	Michael Hodges	Coroner/Medical Examiner	Sanford Health Pathology Clinic (Sioux Falls, SD)

AIRCRAFT INFORMATION

Aircraft Make:	Air Gyro	Aircraft registration:	N499AG
Aircraft Model:	AG915 SPARTAN	Aircraft S/N	MC.L.21.P.1.G.15. AA.008.L
Propeller make, model & S/N	Three-blade HTC propeller S/N 535178		

ENGINE INFORMATION

Engine Type:	Rotax 915 iS3	Engine TTSN	37.8 hrs TTSN
Engine Serial Number:	9133375	Engine TTSOH	N/A
Engine Manufacture date:	18.03.2021	Engine position:	Pusher

ADDITIONAL INFORMATION

Persons in attendance:			
	Jordan Paskevich – Rotech Flight Safety – Rotax Aircraft Engines		
	Michael J Hodges – Investigator In charge – NTSB		
	Nancy B McAtee – Fire and Explosion Specialist - NTSB		
Date of Investigation:	February 7 th 2023		
RFS File number:	2022-026		

DATE	ENGINE MODEL	ENGINE SERIAL NO	REGISTRATION	File number
February 7 th 2023	Rotax 915 iS3	9133375	N499AG	2022-026

NTSB Preliminary

On September 27, 2022, about 1030 central daylight time, an Airgyro AG915 Spartan gyrocopter, N499AG, was destroyed when it was involved in an accident near Yankton, South Dakota. The pilot sustained fatal injuries. The gyrocopter was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

The gyrocopter was based out of a hangar at the Chan Gurney Municipal Airport (YKN), Yankton, South Dakota. The gyrocopter departed from runway 31 at YKN and traveled to the northwest. Shortly after the takeoff, the gyrocopter impacted a flat grass field on private property. The accident site, about 1,350 ft above msl, was located about 2.3 nm northwest from the departure end of runway 31. A postimpact fire consumed the composite airframe. The wreckage was recovered from the accident site for further examination.

According to maintenance records, the pilot was the builder of the gyrocopter, and it was manufactured in August 2022. As a repairman, the pilot performed maintenance work on the gyrocopter several days prior to the accident. The maintenance records showed that at the last work entry on September 24, 2022, the gyrocopter had accumulated 37.8 flight hours. The gyrocopter was equipped with a Rotax Aircraft Engines 915 series engine.



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Initial Inspection

On February 7th, 2023, an engine examination took place at Whistler Aviation in Seward, NE. The aircraft wreckage was stored in a hangar and kept within a wooden box. The aircraft incurred significant damage due to the impact and subsequent fires that transpired before and after the impact.



The engine had become detached from the aircraft and was found inside the storage box. It was removed from the storage box and positioned on a workbench to facilitate a comprehensive examination.

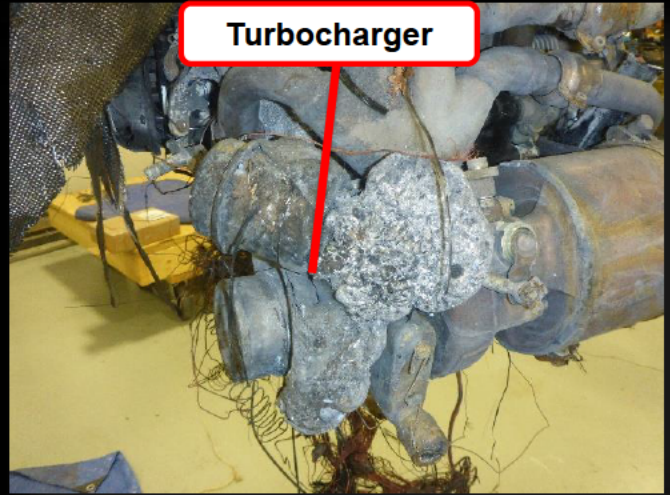
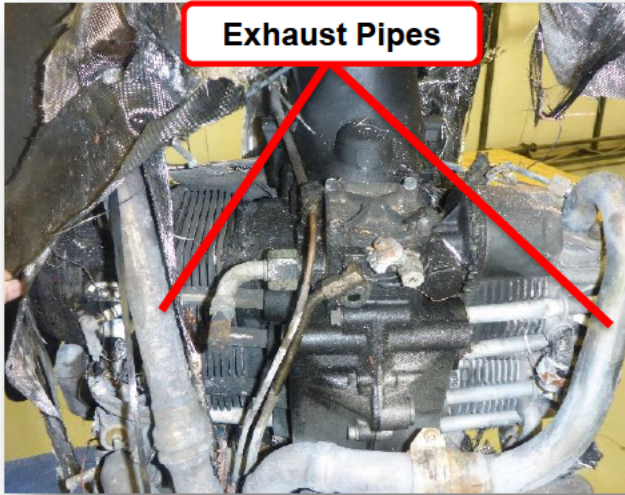
Upon inspection, it was evident that the engine had suffered significant thermal damage, resulting from the fire that occurred both before and after the impact. Notably, a considerable portion of the exposed surfaces exhibited a coating of engine oil.



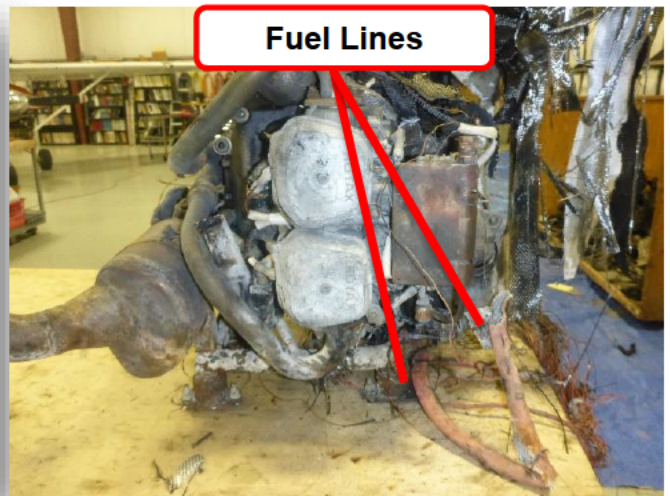
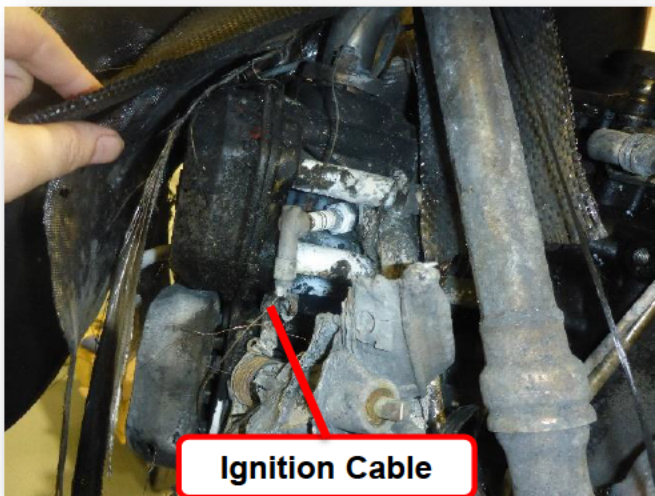
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Initial Inspection

The only area that did not have oil coating was the region near the turbocharger and two of the exhaust pipes.



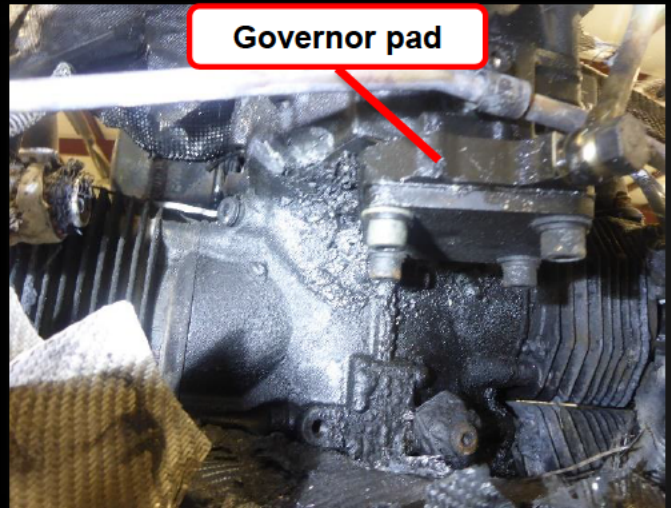
The turbocharger showed signs of thermal damage, indicating exposure to high temperatures during the fire. Additionally, the fire caused destruction to numerous oil, coolant, and fuel lines, as well as various engine system components. The electrical and ignition system of the engine was particularly affected and suffered significant damage, with most of it consumed by the fire.



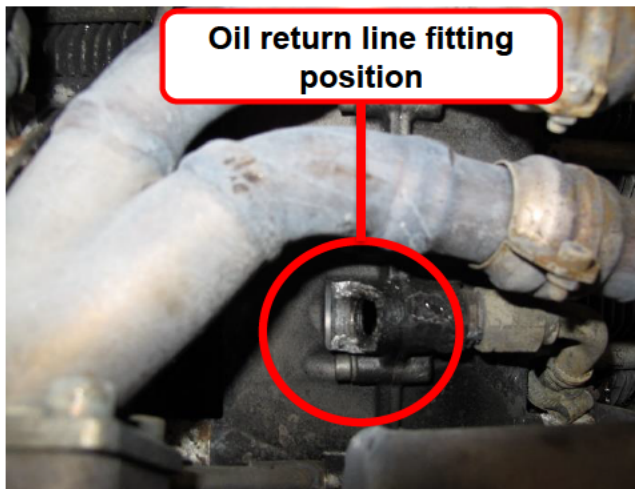
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Initial Inspection

The governor pad exhibited a significant amount of coagulated oil directly underneath it. The feed line banjo bolt comes from the Rotax factory with torque seal paint on the bolt head. However, this marking was not observed on the banjo bolt of the engine involved in the accident. The absence of torque seal paint could also be attributed to the thermal damage inflicted upon the engine during the fire.



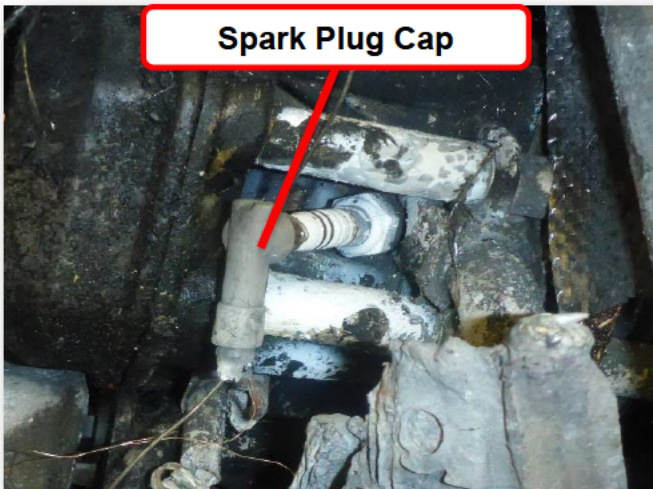
The oil return line fitting, positioned at the bottom of the crankcase and located above the turbocharger, was displaced and exhibited indications of thermal damage, including partial melting in the threads.



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Detailed Inspection

Spark Plugs, Plug caps and Ignition cables: During the investigation, all spark plugs, except for the #4 top spark plug, were successfully removed from the engine. These spark plugs were placed in a holding tray for further examination. It was determined that all the spark plugs installed on the engine were Rotax P/N 297656, and no abnormalities were detected during the inspection process. However, it was observed that the spark plug caps had suffered damage as a result of the fire. Additionally, the post-impact fire had caused the destruction of the spark plug cables.

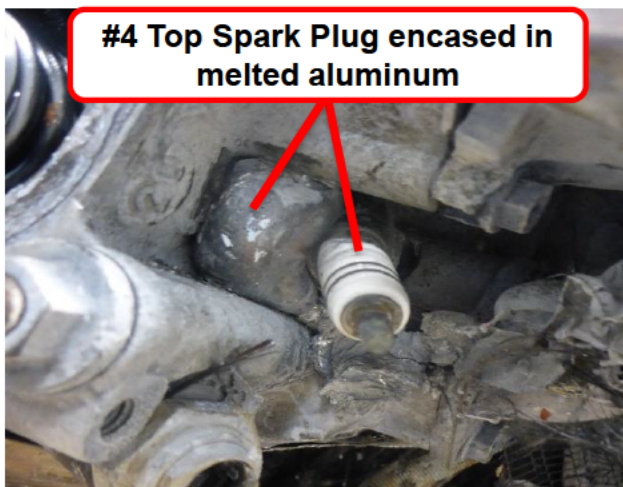


Spark Plug Cap

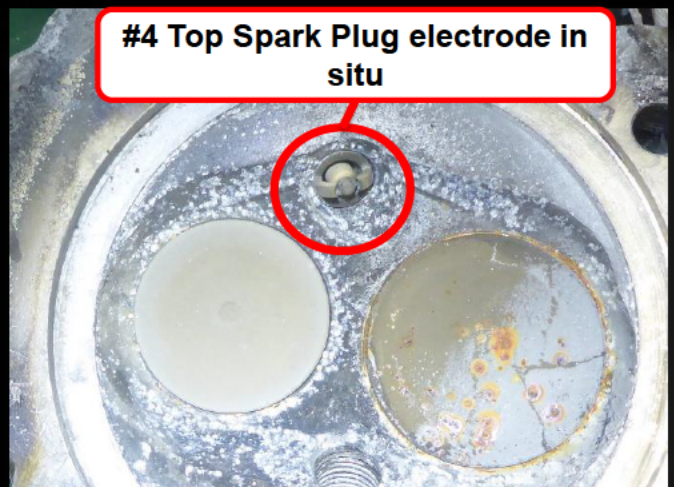


Spark Plugs in Holding Tray

Due to melted aluminum encasing the #4 top spark plug, it was not possible to remove it during the initial investigation. Access to the top of the plug was hindered by the melted aluminum. Only after the #4 cylinder was removed, was it possible to examine the spark plug in situ.



#4 Top Spark Plug encased in melted aluminum

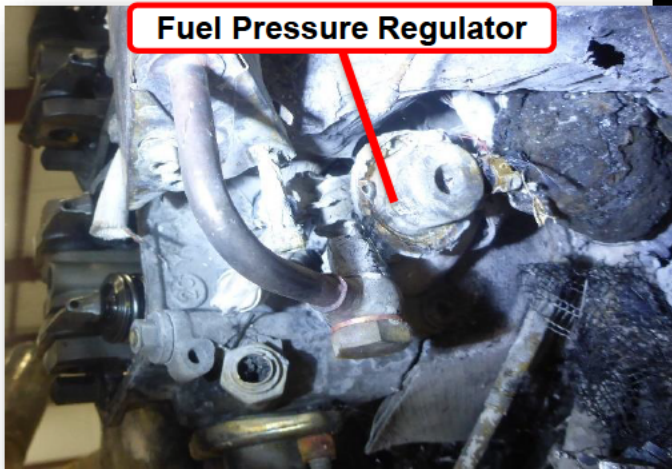


#4 Top Spark Plug electrode in situ

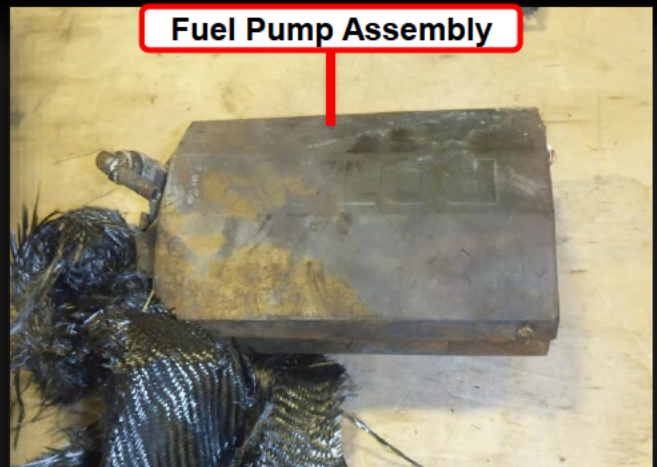
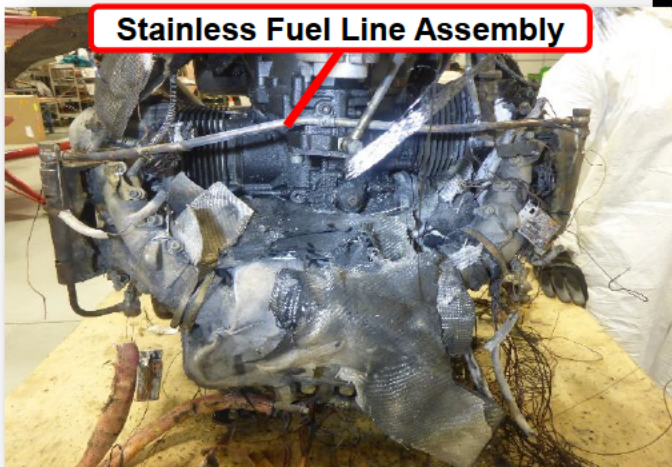
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Detailed Inspection

Fuel System: During the investigation, a comprehensive inspection of the fuel system was conducted. It was determined that the fire had caused extensive damage to the fuel lines, excluding the stainless fuel line assembly installed on the engine. Additionally, the fuel pressure regulator sustained significant fire-related damage. Furthermore, the fuel filter, although found separated from the wreckage, showed visible signs of fire-induced damage.



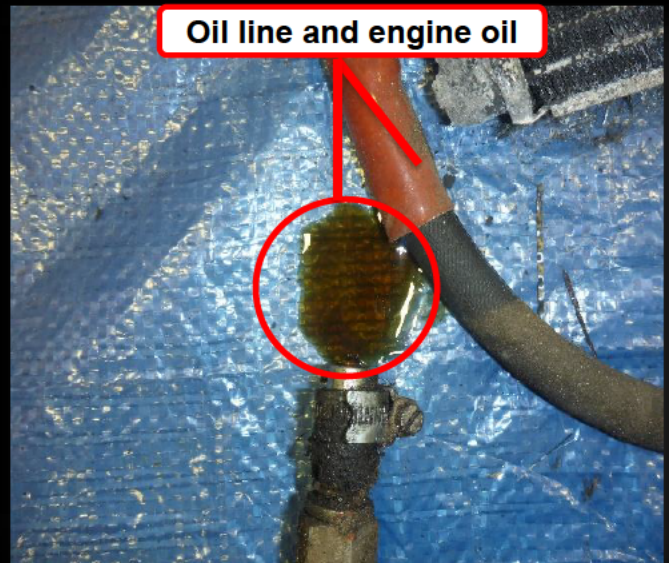
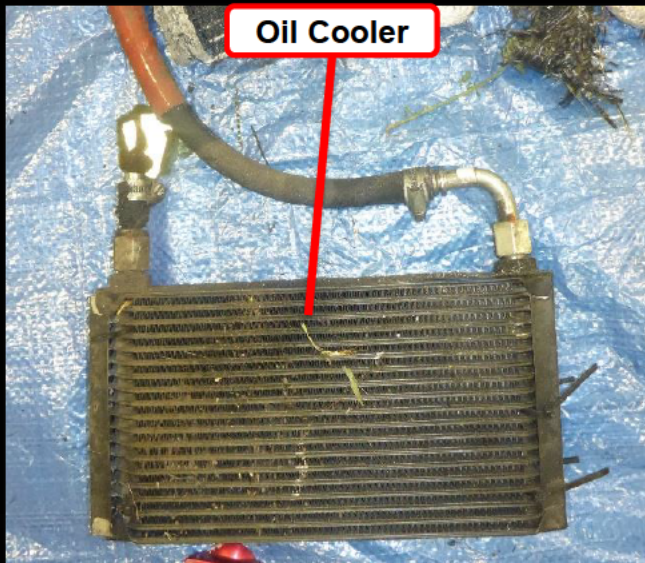
The fuel pump was located and still contained was noticeably damaged by the fire. Unfortunately, due to its condition, it was not possible to conduct a functional test on the fuel pump. Furthermore, it was not possible to obtain a fuel sample.



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Lubrication System: During the investigation, an examination of the lubrication system was conducted. The oil lines showed partial damage by fire. However, the oil cooler remained mostly undamaged, and one oil line was still attached to it. The oil cooler still contained oil, which was carefully drained into a container and sent to the NTSB lab for further analysis.



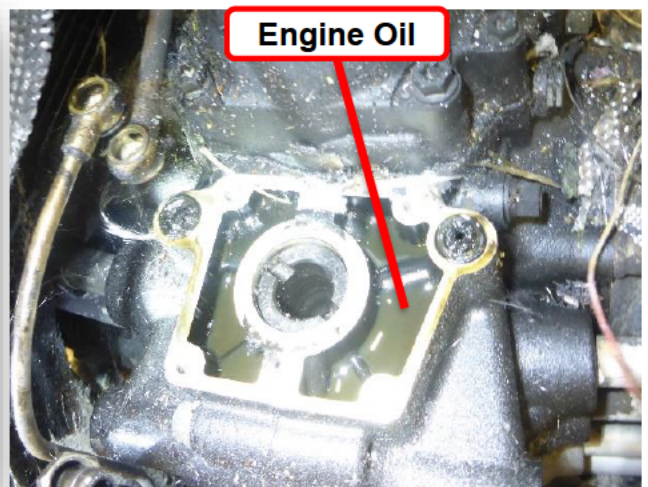
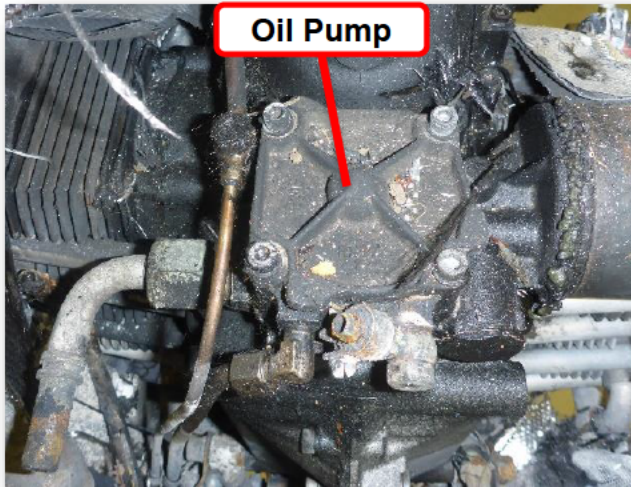
Unfortunately, the oil lines were consumed by the fire after the impact. The oil tank itself sustained some impact damage, and the oil cap was no longer attached.



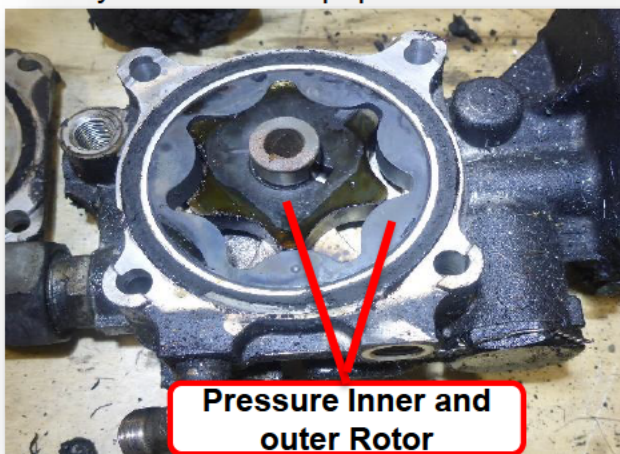
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Detailed Inspection

Lubrication System (Continued) The oil pump was removed from the engine for internal examination. During the inspection, it was discovered that the mounting bolts of the oil pump were found to be loose. However, the loosening of the bolts could have been a consequence of the extreme heat the oil pump endured during the fire.



Although the oil line fittings remained attached to the oil pump, the rubber oil lines were completely consumed by the fire, leaving no trace for examination. Furthermore, the oil filter suffered damage as a direct result of the fire. The intense heat generated by the fire destroyed the internal paper elements of the



Despite the loosened bolts, no abnormalities were discovered during the examination of the oil pump itself. Engine oil was observed contained within the cavity located behind the oil pump.

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Propeller Governor System: The Rotax 915 Model iS3 engine is specifically configured from the Rotax factory to accommodate a governor system for the use of a constant speed propeller. The engine includes several components that facilitate the installation and operation of the governor system.

One of these components is the Governor Pad (Part Number: 810 070). The governor pad is a dedicated part integrated into the engine assembly. Its primary function is to provide a secure mounting point for the governor system.

Additionally, it should be noted that the Rotax 915 Model iS3 engine includes a Governor Pad Plate Cover (Part Number 926 231) specifically intended for shipping purposes. This cover is meant to be removed in order to install a governor on the engine. However, it is important to note that the governor flange cover may be considered as part of the hydraulic governor by the aircraft original equipment manufacturer (OEM) and may not be inherent to the engine design or certified for the specific engine type. In such cases, the proper functioning of the governor flange cover in conjunction with the entire system becomes the responsibility of the aircraft manufacturer.

The Oil Line Assembly (Part Number: 956 460) is another vital component included with the engine. This assembly is designed to connect to the oil pump and is specifically configured for the use of a constant speed propeller. It enables the proper delivery of oil to the propeller governor, ensuring its effective operation.

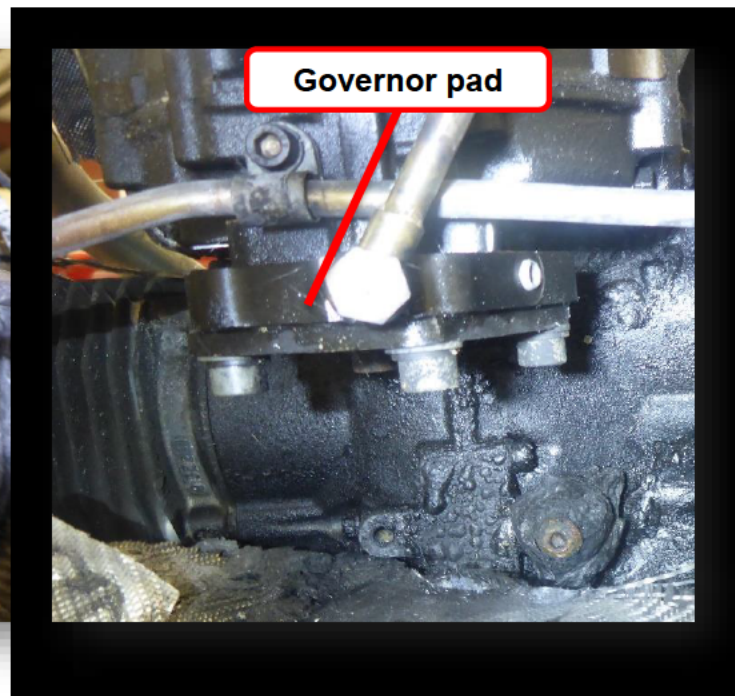
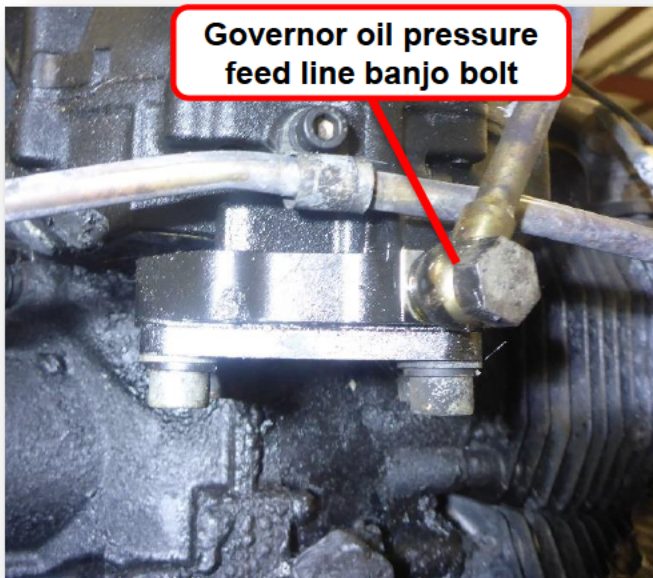
It is important to note that although the Rotax 915 Model iS3 engine is designed to support the use of a constant speed propeller and provides some of the necessary components, it does not come equipped with a propeller governor installed from the Rotax factory. Therefore, it is the responsibility of the operator or installer to acquire a suitable propeller governor separately and install it in conjunction with the engine for proper control and regulation of the propeller's rotational speed.

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Propeller Governor System (Continued): The propeller governor pad system was thoroughly examined to assess its conformity, condition, and installation accuracy. The inspection aimed to ensure that the governor pad system met the required standards and was appropriately installed in accordance with the manufacturer's guidelines.

During the investigation, the governor pad on the engine showed a notable coating of oil, and there was a concentrated area of coagulated burnt oil directly beneath it. Further examination revealed that the governor oil pressure feed line banjo bolt was only finger tight and there was no indications of torque paint or markings were found on the fitting. The absence of torque seal paint and the loose bolt could potentially be attributed to the thermal damage sustained by the engine during the fire.



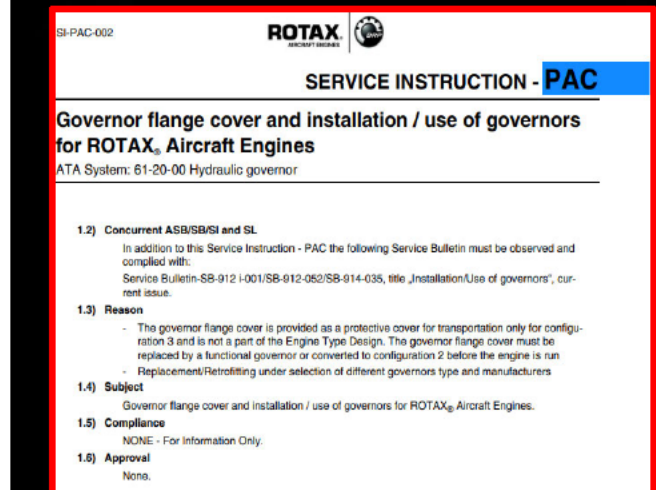
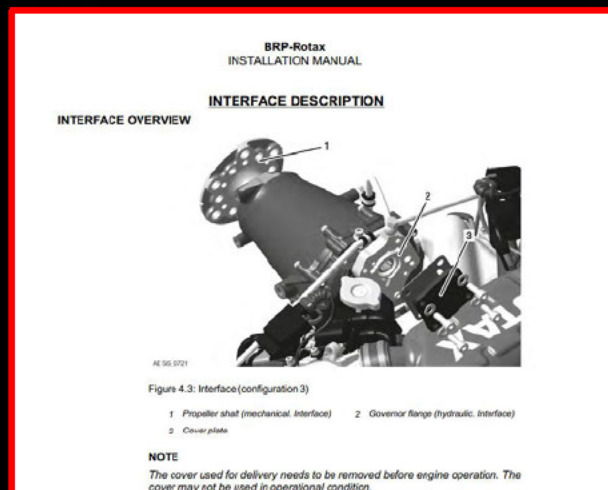
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Propeller Governor System (Continued): During the examination, it was observed that a governor had not been installed on the governor pad, and the governor pad plate cover, intended for shipping purposes, was still in place. The cover plate bolts were found to be only finger tight, which may be attributed to the thermal damage incurred by the engine during the fire. It is important to note that Rotax does not provide a specific torque specification for the cover plate bolts, and a general torque specification is applied based on the size of the bolts.



According to the Rotax 915iS installation manual, this cover is used for delivery needs and may not be used in operational condition. Rotax has also issued a Service Instruction, "SI-PAC-002," in 2019, which clarifies that the cover plate is intended solely for shipping purposes, however it also states that if the aircraft original equipment manufacturer (OEM) considers the cover plate as part of the hydraulic governor system, its usage and functionality may be subject to the aircraft manufacturer's responsibility (See appendix at the end of report for full references)

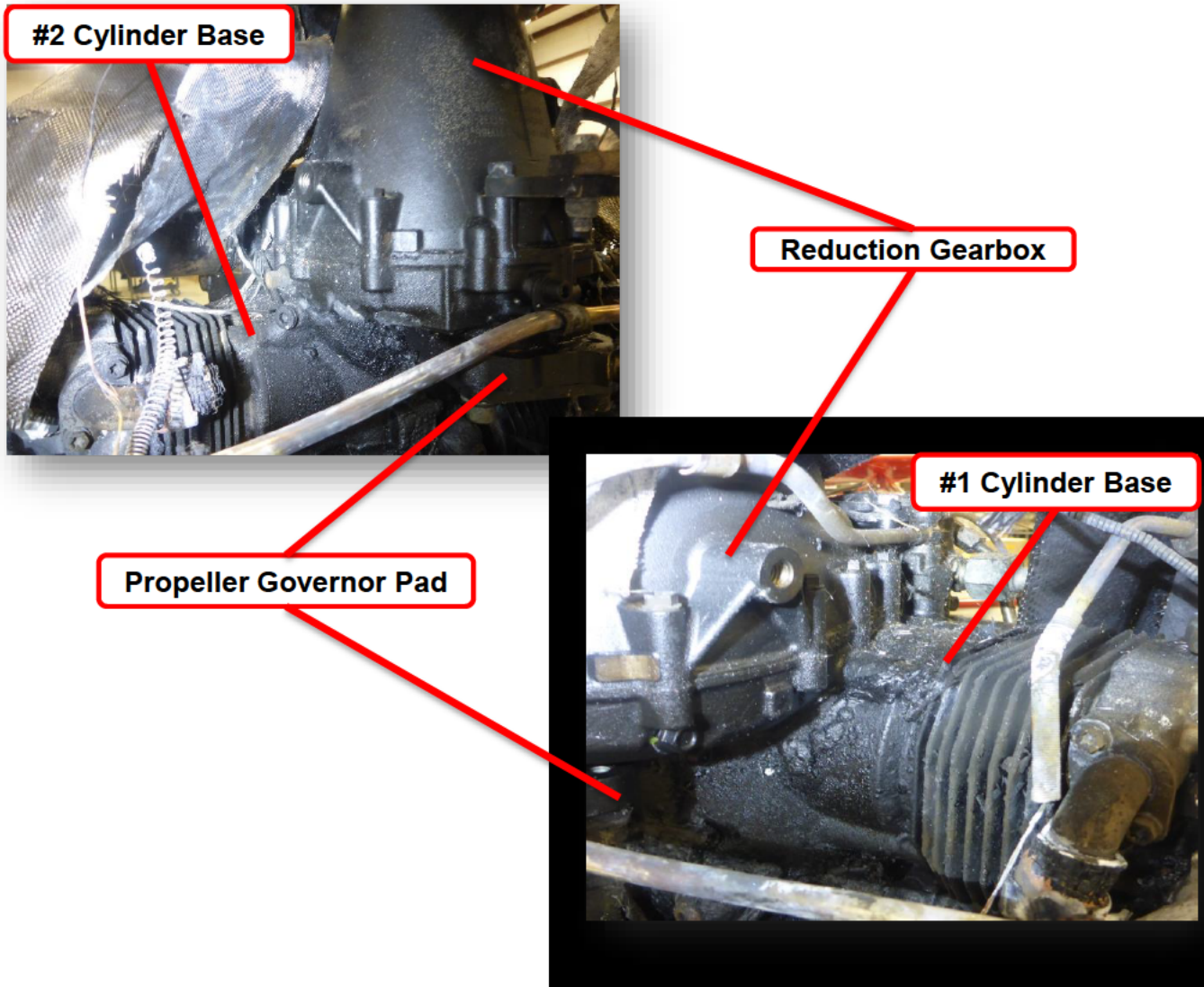


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Propeller Governor System (Continued): Upon inspection, it became evident that the propeller governor pad assembly was the primary source of the oil leak. This conclusion was supported by the significant accumulation of congealed burnt oil found beneath the governor pad. However, due to the loose bolts on both the cover plate and the oil pressure feed line, it is challenging to determine the precise location of the oil leak with absolute certainty. It is worth noting that the loose bolts could potentially be a result of the thermal damage sustained by the engine during the fire.

The leaked oil was observed to have dripped down the engine crankcase, particularly near the #1 and #2 cylinder base. It is believed that this leaked oil made contact with the hot exhaust components, which subsequently ignited and resulted in the in-flight fire.



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Cylinder and cylinder head: The cylinder head valve covers were removed to allow inspection of various cylinder head components. It was observed that the valve covers had been damaged by both the pre-impact and post-impact fires. Specifically, the valve covers for cylinders #2 and #4 showed signs of melting along the bottom edge, accompanied by evidence of dripping and material flow. The direction of the flow indicated that the material was in an upright position during the flight when it began to flow, as depicted in the diagram provided.



2 and # 4 Vave Covers



melting along the bottom edge of #2 and #4 valve covers

After the valve covers were removed, a thorough examination of the cylinder head components was conducted. No abnormalities or issues were found during the inspection of the rocker arms, rocker shafts, pushrods, valve springs, and valves. All these components were found to be in good condition, without any visible signs of damage or anomalies that could have contributed to the incident.



1 and # 3 Cylinder Heads

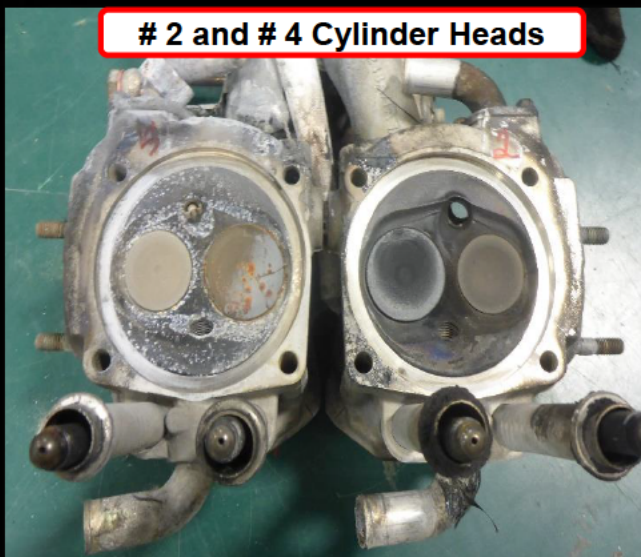
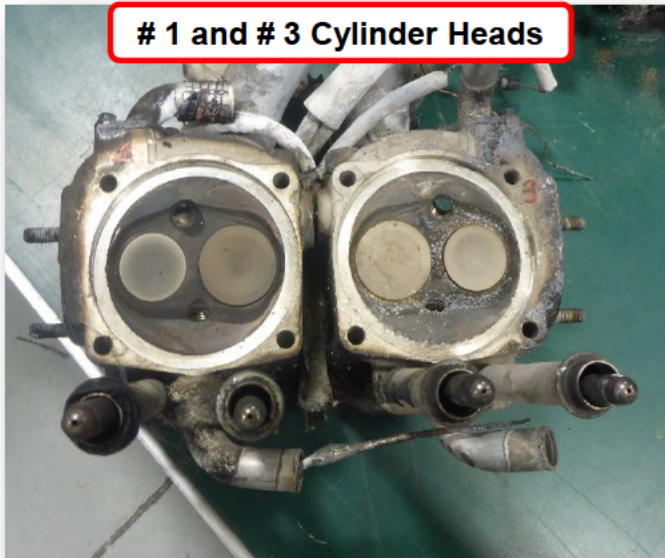


2 and # 4 Cylinder Heads

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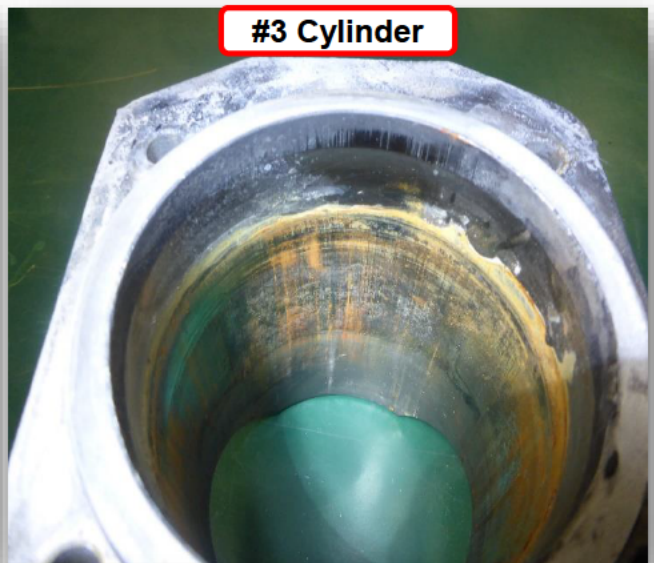
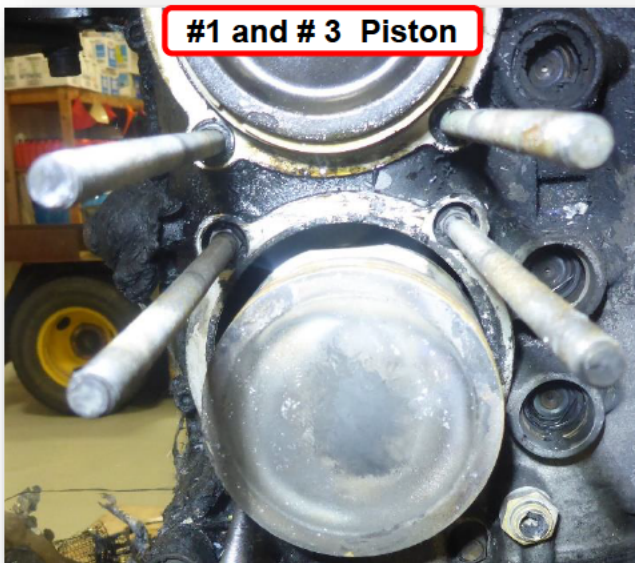
Pistons and cylinder heads: The cylinder heads were removed to provide a comprehensive inspection of the combustion chambers, intake valves, and exhaust valves. No anomalies or irregularities were discovered during the inspection that would impede the engine's normal operation. The examined parts were found to be in satisfactory condition.



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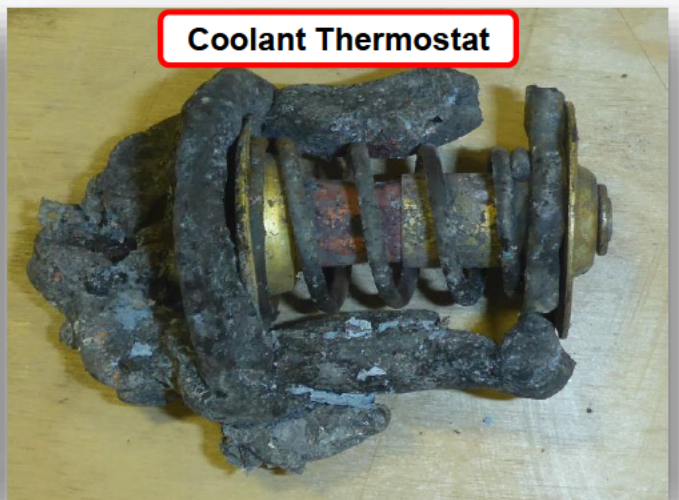
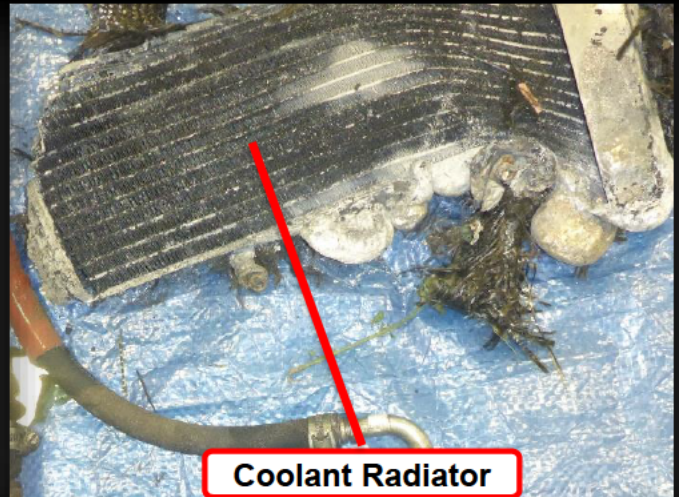
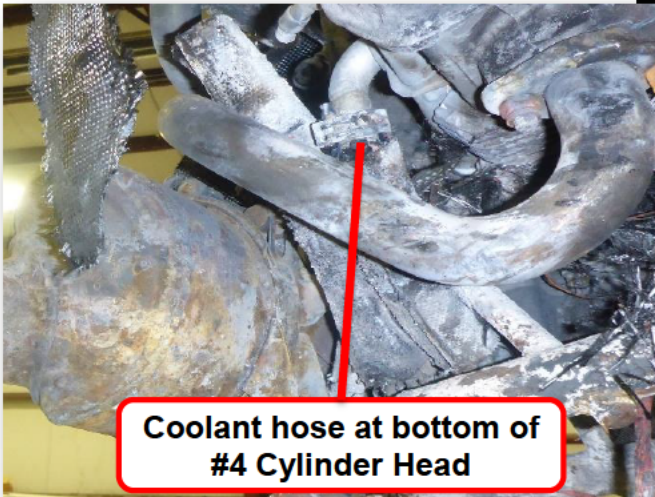
Cylinders: The cylinders were removed to allow for a thorough inspection of the piston rings and cylinder walls. No anomalies or irregularities were detected during the examination that would impede the normal operation of the engine. However, it is noteworthy that the #3 cylinder exhibited some rust on the side of the cylinder wall. This rust may be attributed to the fire extinguishing agent used to suppress the fire, exposure to the elements, or a combination of both factors. It is important to emphasize that this rust is a common occurrence when an engine has been exposed to extreme temperatures during an engine fire and does not indicate any underlying mechanical issues.



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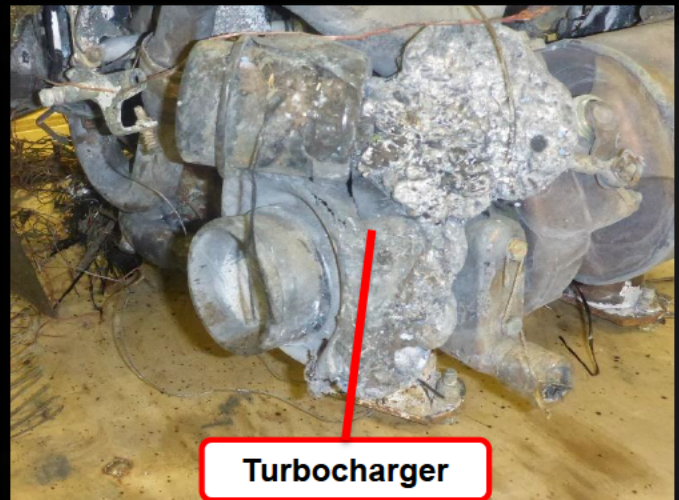
Coolant system: During the examination, it was determined that the fire had consumed the majority of the coolant system. However, some remnants of the coolant hoses, coolant radiator, coolant expansion tank, and thermostat were still present. Other than the significant damage caused by the fire, no anomalies were found with these remaining components.



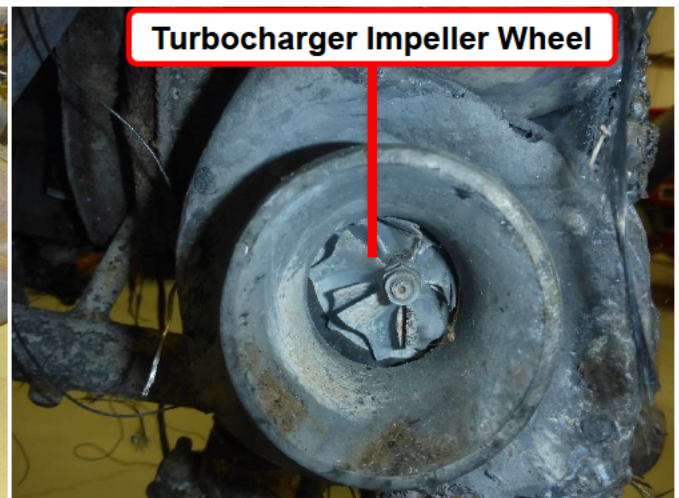
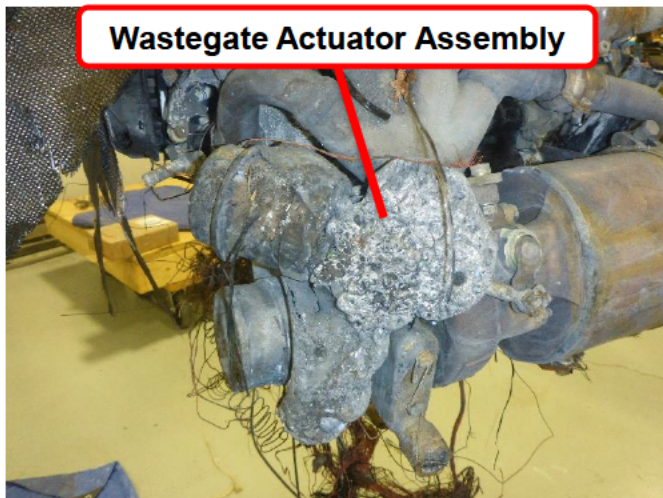
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Air Filtration: During the examination, it was observed that the air filter was still contained within its airbox, but it was no longer attached to the inlet of the turbocharger. The air filter had sustained significant damage as a result of the fire. However, aside from the fire damage to the air filter, no other anomalies were observed.



Exhaust system and Turbocharger: During the inspection of the exhaust system, it was found to be in good overall condition. However, certain components of the turbocharger, such as the cold section impeller wheel and the wastegate actuator assembly, had suffered substantial damage as a result of the fire. The material composition of these components, likely contributed to their vulnerability to fire damage.



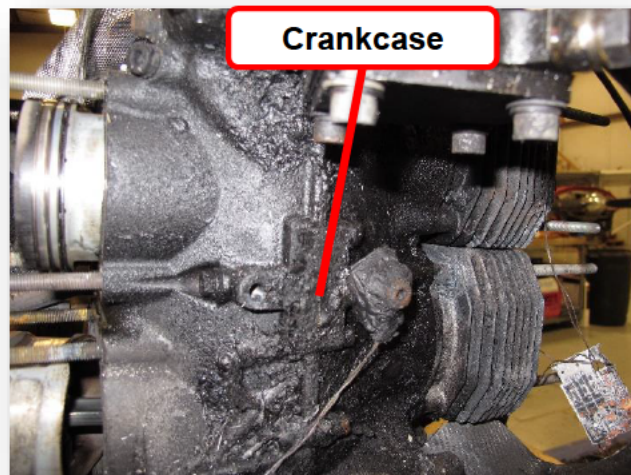
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Magnetic Plug: The magnetic plug was removed and inspected. No unusual accumulation of metallic material was found attached to the magnet. This indicates that the engine and gearbox were not producing excessive internal metal debris, suggesting normal operation and minimal wear within the system.



Crankcase, Crankshaft and Camshaft: The external inspection of the crankcase revealed that it was in good overall condition. However, due to the thermal damage caused by the fire, it was not possible to manually rotate the crankshaft and camshaft during the examination. Considering the thorough examination of other engine components and the suspected cause of the accident being an in-flight fire caused by an oil leak, it was determined that a physical examination of the crankshaft and camshaft was unnecessary for the purpose of this investigation.



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Examination Summary

The investigation conducted a thorough examination of various engine components to determine the cause of the incident. No mechanical anomalies were found that would hinder normal engine operation. A buildup of congealed burnt oil was discovered underneath the governor pad on top of the crankcase, suggesting a potential oil leak. It is believed that the leaked oil dripped onto hot exhaust components, leading to the in-flight fire.

The engine in question was partially configured for a constant speed propeller but required additional components, including a propeller governor. The Rotax factory installs a protective cover plate on the propeller governor pad, which is intended for delivery purposes only and must be removed before flight since it is not intended for operational use. The governor flange cover, as stated in Rotax's SI-PAC-002, serves as a protective cover during transportation in configuration 3 but is not considered part of the Engine Type Design. Prior to engine operation, the governor flange cover must be replaced with a functional governor or converted to configuration 2.

Rotax developed two versions of the Rotax 915 iS engine: the iS2 version, designed for usage without a governor, and the iS3 version, intended for usage with a governor. The iS3 version is delivered without a governor but includes a flange where a governor can be installed. During the end-of-line test, an aluminum cover is mounted on the governor flange to protect the connection area from dirt. It is important to note that the engine manuals explicitly state that this cover is not suitable for flight operations. Converting an iS3 engine to an iS2 engine requires following detailed instructions found in the Maintenance Manual Heavy (MMH 72-10-00), involving the replacement of the flange and other modifications. In this case, the engine operated as an iS3 version without a governor and without the necessary conversions outlined in the Maintenance Manual Heavy, which may have had an impact on the accident.

According to Rotax's SI-PAC-002, the aircraft OEM (Original Equipment Manufacturer) may declare the governor flange cover as part of the hydraulic governor, meaning it might not be considered part of the Engine Type Design. In such cases, the PAC (Part Approved by Certification) has been tested and approved by BRP-Rotax but may not be certified for the specific engine type. Therefore, ensuring correct functionality in conjunction with the entire system becomes the responsibility of the aircraft manufacturer, who must collaborate with the aircraft to address any issues.

In conclusion, the investigation uncovered a significant finding of an oil leak originating from the governor pad assembly, which was determined to be the cause of the in-flight fire. However, the specific reason for the oil leak, whether it was due to the presence of the cover plate, loose cover plate bolts, or problems with the governor oil pressure feed line, could not be conclusively determined.

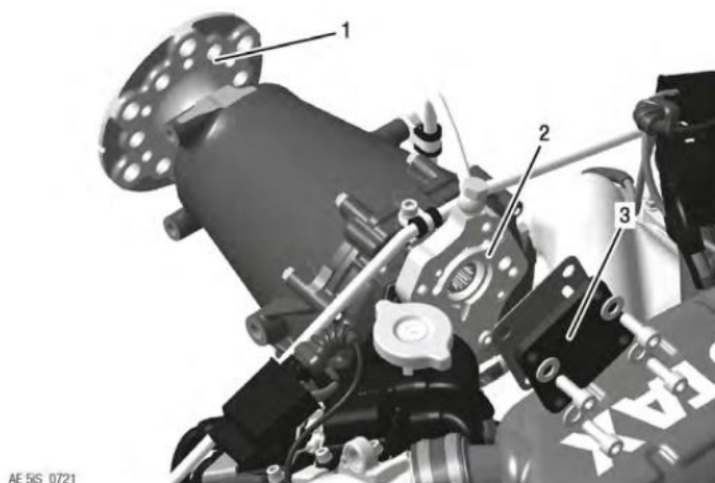
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Appendix

BRP-Rotax INSTALLATION MANUAL

INTERFACE DESCRIPTION

INTERFACE OVERVIEW



AE 5S_0721

Figure 4.3: Interface (configuration 3)

- 1 Propeller shaft (mechanical. Interface)
- 2 Governor flange (hydraulic. Interface)
- 3 Cover plate

NOTE

The cover used for delivery needs to be removed before engine operation. The cover may not be used in operational condition.

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Appendix

SI-PAC-002



SERVICE INSTRUCTION - PAC

Governor flange cover and installation / use of governors for ROTAX® Aircraft Engines

ATA System: 61-20-00 Hydraulic governor

1) Planning information

"PAC" Service Instruction Documents provide detailed information on ROTAX® Aircraft Engine Parts and Accessories. Depending on the engine type used with referenced parts and accessories may be provided with or without EASA certification or ASTM compliance. Certification / Compliance of referenced Parts and Accessories must in such cases be completed by the aircraft OEM. To obtain satisfactory results, procedures specified in this publication must be accomplished with accepted methods in accordance with prevailing legal regulations.

BRP-Rotax GmbH & Co KG cannot accept any responsibility for the quality of work performed in accomplishing the requirements of this publication.

1.1) Applicability

Refer to the latest issue of the relevant Illustrated Parts Catalog of your specific engine type.

NOTICE

The governor flange cover may be declared as part of the hydraulic governor on by the aircraft OEM and so might not be a part of the Engine Type Design. Such a PAC part has been then tested and released by BRP-Rotax, but it might not be certified for the relevant engine type. In such a case the correct function in conjunction with the entire system is the responsibility of the aircraft manufacturer and must be carried out jointly with the aircraft.

1.2) Concurrent ASB/SB/SI and SL

In addition to this Service Instruction - PAC the following Service Bulletin must be observed and complied with:

Service Bulletin-SB-912 i-001/SB-912-052/SB-914-035, title „Installation/Use of governors“, current issue.

1.3) Reason

- The governor flange cover is provided as a protective cover for transportation only for configuration 3 and is not a part of the Engine Type Design. The governor flange cover must be replaced by a functional governor or converted to configuration 2 before the engine is run
- Replacement/Retrofitting under selection of different governors type and manufacturers

1.4) Subject

Governor flange cover and installation / use of governors for ROTAX® Aircraft Engines.

1.5) Compliance

NONE - For Information Only.

1.6) Approval

None.

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Current valid documentation see:
www.flyrotax.com

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1.7) Labor time

Estimated labor hours:

Engine installed in the aircraft - - - labor time will depend on airframe installation and therefore no estimate is available from the engine manufacturer.

1.8) Mass data

Change of weight - - - none.

Moment of inertia - - - unaffected.

1.9) Electrical load data

No change.

1.10) Software modifications

No change.

1.11) References

In addition to this technical information refer to current issue of

- Operators Manual (OM)
- Illustrated Parts Catalog (IPC)
- Installation Manual (IM)
- Maintenance Manual Line (MML)
- Maintenance Manual Heavy (MMH)

NOTE: The status of the Manuals can be determined by checking the table of amendments. The 1st column of this table shows the revision status. Compare this number to the one listed on the ROTAX Website: www.flyrotax.com. Updates and current revisions can be downloaded for free.

1.12) Other Publications affected

None.

1.13) Interchangeability of parts

Not affected.

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2) Material Information

2.1) Material- cost and availability

The governors are not directly supplied by ROTAX[®] Authorized Distributors or their independent Service Centers. They can be obtained via the sales network of the respective manufacturer.

2.2) Company support information

- Any possible support by BRP-Rotax will be provided on request by ROTAX[®] Authorized Distributors or their independent Service Centers.

2.3) Material requirement per engine

The amount of new parts required for installation of the respective governor type is indicated by the manufacturer of the governor.

2.4) Material requirement per spare part

None.

2.5) Rework of parts

None.

2.6) Special tooling/lubricants- /adhesives- /sealing compounds

None.

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3) Accomplishment/Instructions

Accomplish- ment

- ROTAX reserves the right to make any amendments to existing documents which might become necessary due to this standardization, at the time of next revision or issue.
- NOTE: Before maintenance, review the entire documentation to make sure you have a complete understanding of the procedure and requirements.

All measures must be implemented and confirmed by at least one of the following persons or organizations:

- ROTAX® - Airworthiness representatives
- ROTAX® - Authorized Distributors or their independent Service Centers
- Persons approved by the respective Aviation Authority
- Persons with approved qualifications for the corresponding engine types. Only authorized persons (iRMT, Level Line Maintenance) are entitled to carry out this work.

Governors are not part of the engine. Governors specifically developed for this engine can be ordered. Furnishing proof according to the latest manufacturing specifications such as FAR and EASA shall be made by the aircraft or airframe manufacturer or the governor manufacturer.

3.1) Spare Parts - related information



See relevant Illustrated Parts Catalog for the respective engine type, Chapter 61-20-00.

3.2) Installation - related information

3.2.1) Technical data

Governor flange

AND20010.

Governor drive

Internal toothing 20/40 SMS 1834 NA 14x1.27x30x12.

Reduction ratio

0.58 of the engine speed at gearbox with $i = 2.27$.
0.54 of the engine speed at gearbox with $i = 2.43$.
0.39 of the engine speed at gearbox with $i = 2.54$.

Direction of rotation

Direction of rotation of governor drive: Clockwise rotation seen on the attachment flange.

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3.3) Operation - related information

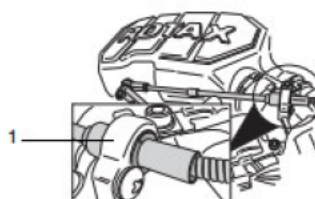
General Depending on the design/construction control cable of the governor, one of the flanges from intake manifold can be used (Fig. 1) for the installation of a support.

Operating limits

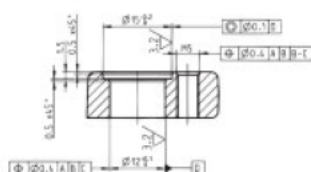
Power consumption of the hydraulic propeller governor	
Max.	600 W

Fig. 1

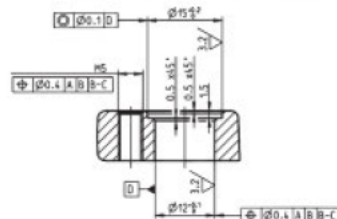
1 Flange from intake manifold 2/4



Detail: Flange from intake manifold 2/4



Detail: Flange from intake manifold 1/3



3.4) Maintenance (Line) - related information

Points of inspection	Interval Operating hours		Chapter Reference
	100 h	200 h	
Check for chafing or wear on the governor arm, governor cable, bushing halves and intake manifold connection point		X	See relevant Maintenance Manual (Line) for the respective engine type and its periodical maintenance information. NOTE: Observe the governor and governor cable manufacturer's installation instructions and specifications.



Follow the governor manufacturer's instructions for maintenance, inspection and repair.

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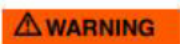
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3.5) Maintenance (Heavy) - related information

Safety information



WARNING

Follow the general safety instructions during all work on the engine and the assemblies around it.



Follow the governor manufacturer's instructions for maintenance, inspection and repair.

3.5.1) Preparation

- General visual inspection.



See relevant Maintenance Manual Line for respective engine type.

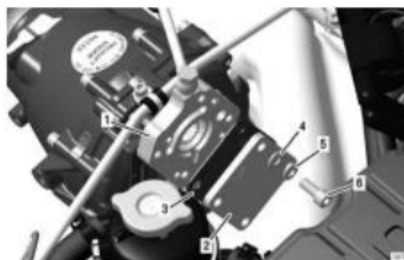
3.5.2) Governor flange cover - removal

See Fig. 2.

Step	Procedure
1	Loosen 4 Allen screws M8x20 along with lock washers A8 and washers 8.4.
2	Remove the cover and the gasket.

Fig. 2.

- 1 Governor flange
- 2 Cover
- 3 Gasket
- 4 Lock washer A8
- 5 Washer 8.4
- 6 Allen screws M8x20



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3.6) Governor - Installation

For the 912 i and 915 i Series engines.

NOTE: Check your selected governor type for proper some governors will not fit. Use and specification due to their length.

NOTICE

Various screws and nuts are required, depending on the manufacturer of the governor.



Refer to the information of the governor aircraft manufacturer on installation, function, operation and maintenance of the governor.

Governor flange

See Fig. 3.

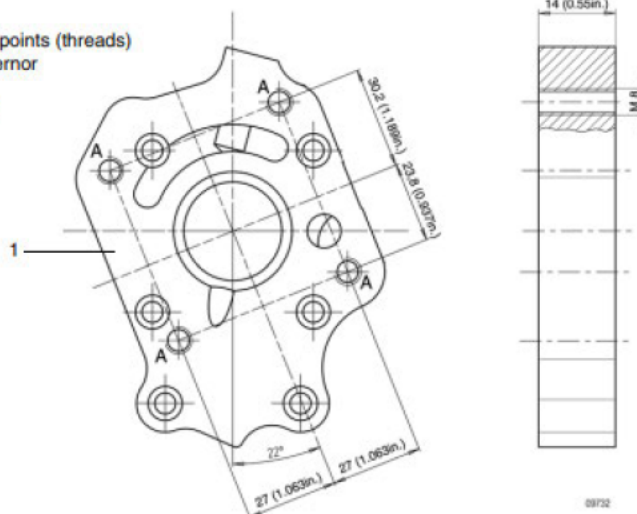
Thread length	
Min. 8 mm (0.31 in.)	Max. 14 mm (0.55 in.)

Tightening torque of the attachment screws/studs according the governor aircraft manufacturer.

Fig. 3.

A.....attachment points (threads) of the governor

1 Governor flange



- Restore aircraft to original operating configuration
- Purge the lubrication system according to the current Maintenance Manual and Service Instruction SI-912 i-004/SI-915 i-003/SI-912-018/SI-914-020, current issue (if the lubrication system was opened or drained during maintenance work)
- Connect negative terminal of aircraft battery

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3.7) Check of governor

Operational test of the governor as per specification of the Flight Manual and governor aircraft manufacturer.

3.8) Test run

In case of uninstalled engines test run can be skipped as this is covered by the mandatory test run after installation.



Conduct test run. See chapter 12-20-00 of the latest Maintenance Manual Line for the respective engine type.

3.9) Summary

The execution of the Service Instruction - PAC must be confirmed in the logbook.

I A revision bar outside of the page margin indicates a change to text or graphic.

Translation into other languages might be performed in the course of language localization but does not lie within ROTAX' scope of responsibility.

In any case the original text in English language and the metric units are authoritative.

3.10) Inquiries

Inquiries regarding this Service Instruction - PAC should be sent to the ROTAX® Authorized Distributor of your area.

A list of all ROTAX® Authorized Distributors or their independent Service Centers is provided on www.flyrotax.com.

NOTE: The illustrations in this document show the typical construction. They may not represent full detail or the exact shape of the parts which have the same or similar function. Exploded views are **not technical drawings** and are for reference only. For specific detail, refer to the current documents of the respective engine type.

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