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AS-ERA

Date: 09/04/2024

Subject: ERA24LA099 – Fuel Pump Examination (Report: 02371-AA)

Contact: Alexander Lemus – Program Manager, SwissDrones

The following are excerpts from report 02371-AA that was produced by SwissDrones in regard to the fuel pump examination for the accident UAS:

1. 5.1 Fuel Pump

Type: FP400-J-SD (SDP-000314)

Serial number: SN0027

2. 5.2 Aircraft

Type: SDO 50 V2

Serial number: 551024

3. 6 Investigation Environment

“The investigation takes place in the facilities of JETMAX Feinmechanik. SDO, JETMAX and the STSB were part of the investigation.”

4. 7 Fuel Pump Performance

7.1 Fuel Pump Test

	Action	Criterion	Result
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SWISSDRONES 

	Record team	Nicola Frauenfelder (Test Engineer), Martin Fluck (STSB), Josef Bärtsch (Test Pilot), Dieter Albisser (JETMAX)	
	Record date/time	July 16 th , 2024 10:00am	
1	Install fuel pump on the test device		Ok
2	Connect fuel pump to ECU (JETMAX)	Supply voltage set to 13 V	Ok
3	Vent fuel pump before running it		Ok
4	Run fuel pump with 1.4 V	37ml/min, 1.47bar	Ok
5	Run fuel pump with 2.5 V	155ml/min, 0.2bar	Ok
6	Run fuel pump with 4 V	288ml/min, 0.41bar 260ml/min, 2.68bar	Ok
7	Run fuel pump with 5 V	374ml/min, 0.59bar	Ok
8	Run fuel pump with 4.6 V	307ml/min, 3.3bar	Ok
9	Disconnect ECU (JETMAX)		Ok
10	Uninstall fuel pump from test device		Ok
11	Open pump head		Ok
12	Disassemble pump head		Ok
13	Inspect all parts of the pump head	- Barely visible wear at gear cage - Potential micro cracks in gears	

5. 7.2 Fuel Pump Performance Analysis

“The investigation confirmed that the fuel pump delivers fuel without any fluctuations or interruptions.”

6.

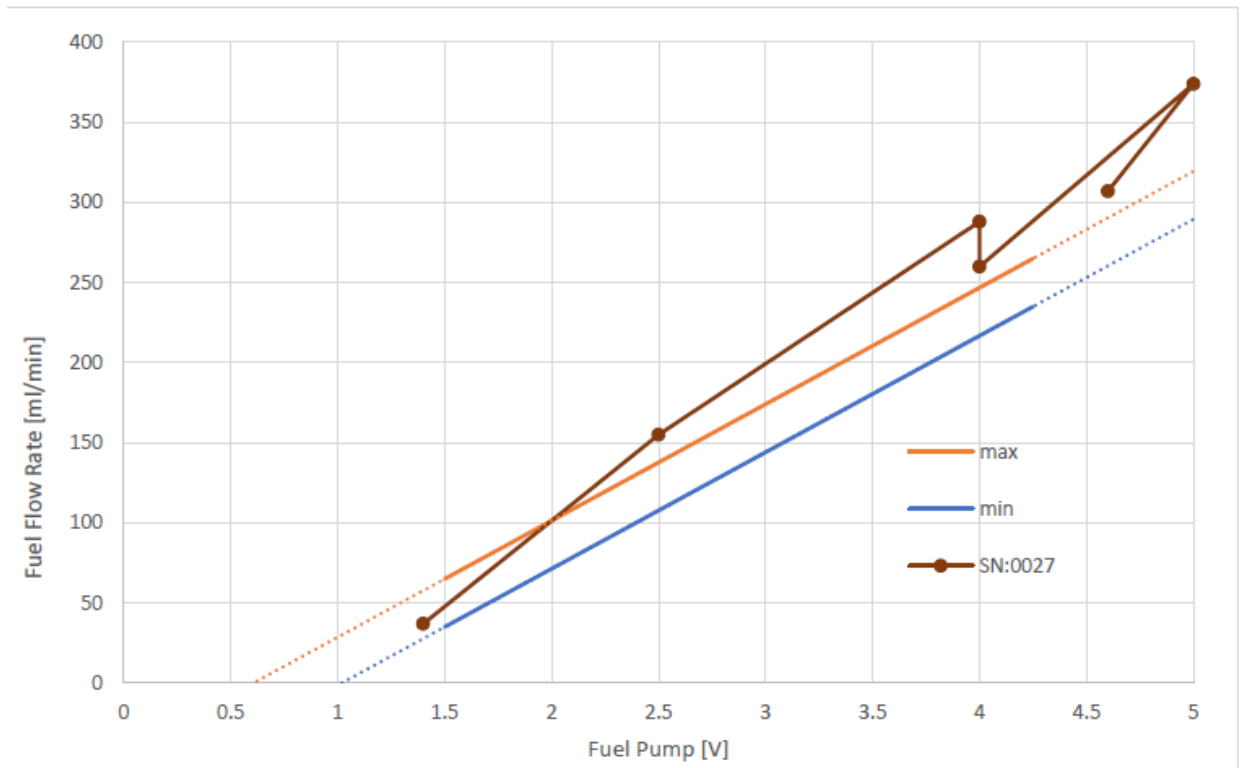


Figure 2: fuel flow w.r.t. fuel pump voltage 551024 N780PA during the investigation

7.

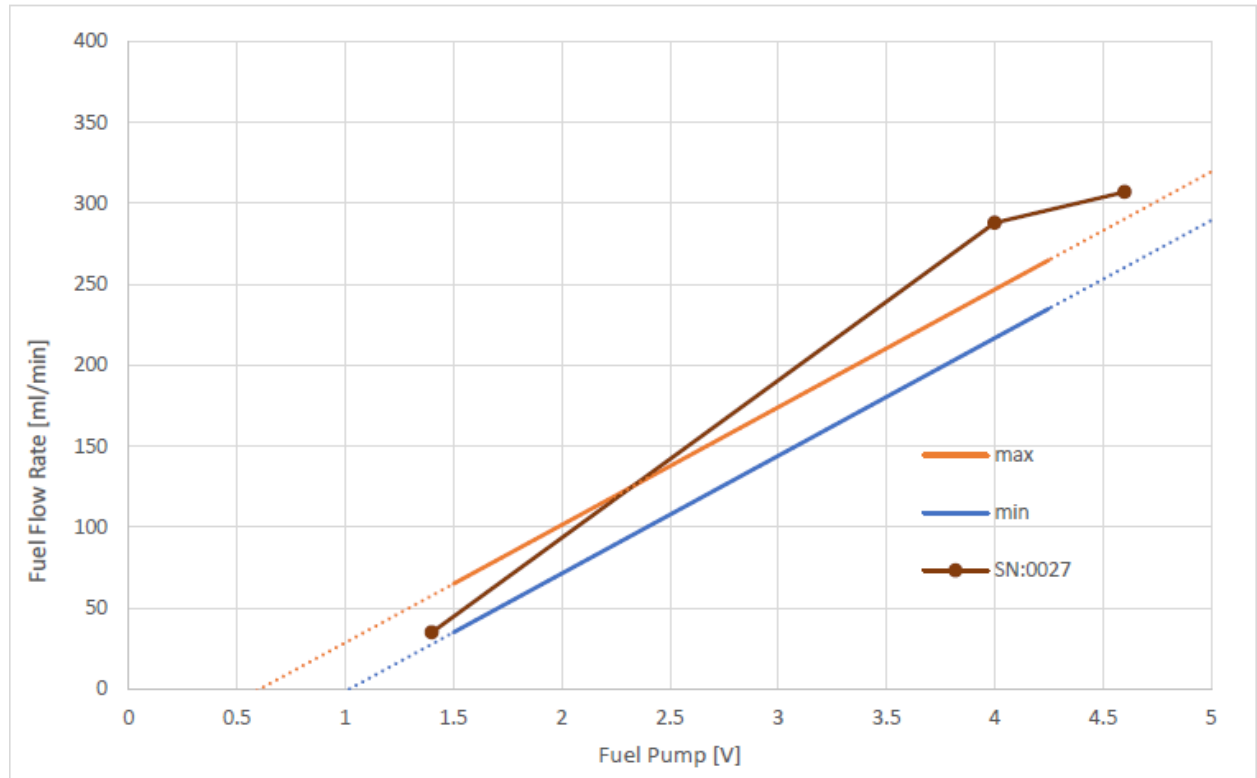


Figure 3 Fuel Pump Performanve Pressurized

8. 7.3 Fuel Pump Inspection

“Some wear in the gear cage as well as some potential micro cracks in the teeth of the pump gears were found.”

“When disassembling the pump head, one part (brass) right next to the pump gears showed markings of the gear teeth as can be seen in Figure 4 marked in red.”

“Additionally, some markings in the gear cage have been found indicating wear and friction between the gears and the cage.”

9.

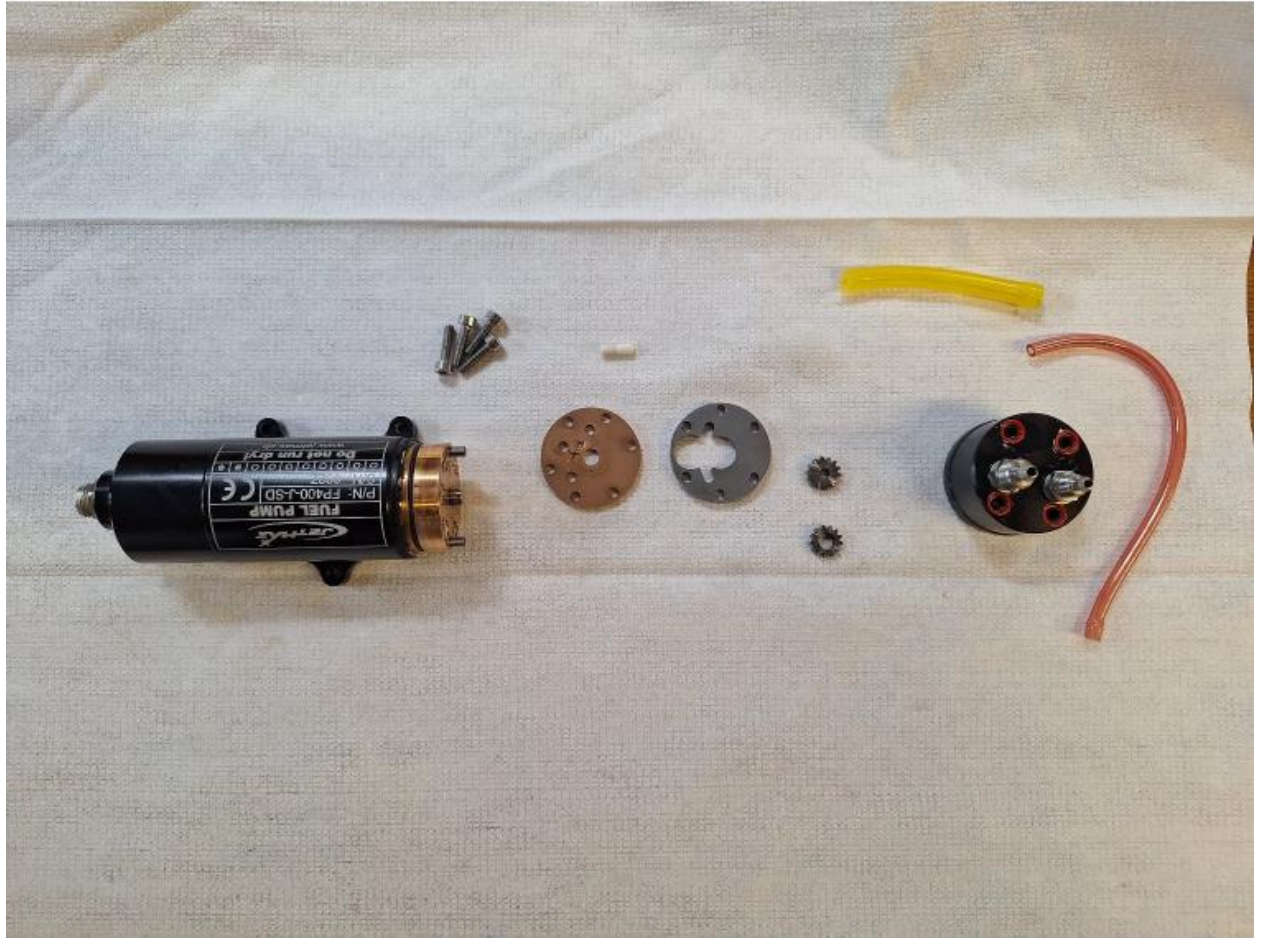
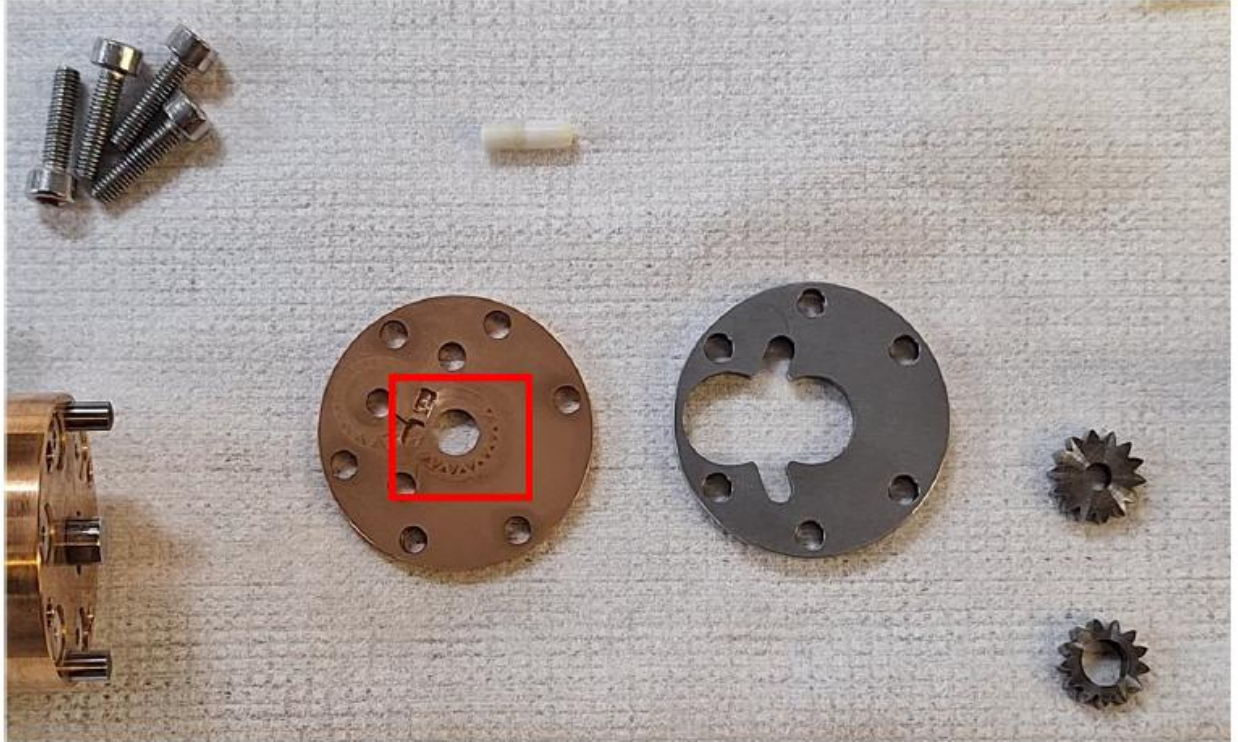


Figure 4 Disassembled Pump Head SN0027

10.



Picture 1: Gear teeth markings on pump head part