**MEMORANDOM**

**Daniel P. Boggs**
**Air Safety Investigator**
**National Transportation Safety Board**
**Office of Aviation Safety - Eastern Region**

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**Date: August 21, 2018,**
**NTSB Case Number: ERA18FA138**

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The fuel servo, model RSA-10ED1, S/N 72GD2401 was taken to Avstar Fuel Systems, Inc. for examination and testing. The unit was removed from the box and examined. The cotter pin was missing from the throttle lever and the safety wire was missing from the mixture adjustment stop bolt. All controls moved smoothly and appeared to be in good working order.

The unit was connected to a test bench and ran through different scenarios to simulate take-off power, idle and cruise. The unit passed all test points. The idle mixture was noted to be a little rich but would not affect the performance of the engine.

See test specification page.

The B-nut was then loosened to simulate the condition of the line as found during the on-site investigation. As soon as the B-nut was broken loose from the torque, it started leaking and spraying out, also inducing some air into the servo unit, viewed by air bubbles coming out the return line. The line could not be loosened two full turns as found during the on-site exam as to much fluid was spraying out.

See video in docket.

Dan Boggs
Air Safety Investigator
NTSB

HYST. OK Ø
PRESS. OK Ø
TRAV. OK 2ppm

RAR

TEST SPECIFICATION
**SERVICE LIMITS**
PRECISION AIRMOTIVE LLC - FUEL CONTROLS - MARYSVILLE, WASHINGTON

10171-03
[redacted]1-13-12

**INSTALLATION PARTS LIST:** 2524273-12 **MODEL:** RSA-10ED1 **SERIAL NUMBER:** 72GD2401

**OPERATOR:** RENE LOEW **DATE:** 08/21/2013

BASIC PARTS LISTS: 2524516, 2524648 FUEL PRESSURE: 25-27 PSI FUEL SP. GRAV. 0.733 @ 76 °F

| TEST POINT NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| METERING SUCTION (INCHES OF WATER) | 0 | 0 | 3.6 | 15.8 |
| CORRESPONDING AIRFLOW (LBS/HR) | 0 | 0 | 800 | 1700 |
| MIXTURE CONTROL POSITION | RICH | ICO | RICH | RICH |
| THROTTLE POSITION | W/O | W/O | W/O | W/O |
| **FLOWMETER LIMITS** | | | | |
| MINIMUM | 32.5 | 0 | 75.0 | 154.8 |
| OBSERVED (LBS/HR) | 51.0 | 1 | 77.0 | 155.0 |
| MAXIMUM | 44.7 | 5 cc/min | 84.0 | 165.5 |
| **BURETTE TIME LIMITS** (Using MIL-C-7024 Type II STODDARD) | | | | |
| *BURETTE VOLUME (cc)* | *200* | | *500* | *850* |
| MINIMUM | 27.3 | | 36.3 | 31.3 |
| OBSERVED (SECONDS) | X | | X | X |
| MAXIMUM | 37.6 | | 40.7 | 33.5 |
| **METERING HEAD AVG** | | | 6.7 | 37.8 |
| OBSERVED (" STODDARD) | 3.5 | | 8.5 | 37.5 |

IDLE FUEL FLOW 12ppk @ 0.004"