



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

MAGNETO AND CARBURETOR EXAMINATION

WPR17LA096

This document contains 8 embedded photographs.

A. ACCIDENT

Location: Mukilteo, Washington
Date: May 2, 2017
Aircraft: Piper PA-32-260, Registration Number: N3457W, Serial #: 32-326
NTSB IIC: Elliott Simpson

B. EXAMINATION PARTICIPANTS:

Elliott Simpson
Senior Aviation Accident Investigator
National Transportation Safety Board

John Jackson
Pacific Continental Engines
Simi Valley, CA

C. SUMMARY

Examination of the carburetor and magnetos was conducted on July 19, 2017 at the facilities of Pacific Continental Engines, Simi Valley, CA.

D. DETAILS OF THE INVESTIGATION

1.0 Carburetor Examination

Type: MA-4-5 10-4404
S/N: A04511063

The carburetor had a red data plate, which indicated the original manufacturer to be Facet. An “MF” was stamped next to the serial number, which according to AvStar Fuel Systems Inc. documentation, indicates a brass float was installed (Photo 1). Maintenance records indicated that the carburetor was installed in 1997, coincident to engine overhaul. The records did not document the serial number or facility the carburetor was purchased from, instead simply referencing the part number, 10-4404. No other carburetor related maintenance entry was found beyond the replacement of the sump plug in 2006, and the repair and removal of the carburetor inlet air box.

The carburetor appeared undamaged, and all fittings were intact. The fuel inlet screen was removed, appeared slightly deformed, and was free of debris (Photo 2). The throttle and mixture control arms could be freely moved by hand. Resistance was felt with movement on one direction of the throttle, consistent with an adequate seal and operating check valve for the accelerator pump.

All carburetor body to bowl screws were secure and tight, and remained affixed with a lock-tab washer. There was no evidence of fuel leak and discoloration at the body and bowl interface. The carburetor bowl was separated to facilitate internal examination. The brass float assembly was intact, and the clearance from the throttle body to bowl gasket and float was measured to be 13/64 inches on both sides (Photo 3), in accordance with maintenance documentation.

The float-to-bowl clearance was then measured utilizing the M-510 gauge and a gauge pin. According to maintenance documentation, the clearance should be 0.081 inches. The gap was less than 0.081 inches (approximately half the value) on the outboard surface of the accelerator pump float, and the inboard surface of the other float (Photo 4). Marvel-Schebler Service Bulletin SB-4 Rev. B documents the measurement of this dimension, and required that a "FC" be stamped on the carburetors body flange, adjacent to the throttle shaft. No such annotation was noted.

The float shaft attach bracket remained firmly attached to the carburetor body, and the float pivoted freely on its shaft. The float assembly was disassembled. Various scratches and chafe marks were located within the bowl assembly adjacent to the floats (Photo 8). No significant corresponding chafing was noted on either of the floats. The float assembly had the stamped numbers 7-69 and SC 30-764 on its attachment bracket. When laid on a flat surface, the floats appeared to be twisted relative to each other, with one float resting about 1/16 inch above the other at its tip.

The float valve was intact, and its rubber tip was pliable but firm. A slight radial indentation was observed to the tip (Photo 5). The valve seat was clear and free of debris.

The accelerator pump discharge valve was of the spring type, and was intact (Photo 6).

White material consistent with thread sealant compound was found on multiple bolt threads throughout the carburetor fitting, including the inlet filter screen (Photo 7), in deference to Service Bulletin: SB-10 Rev B.

The float was dipped in Avgas for 3 hours following the examination by Elliott Simpson, and no leaks or bubbles were observed.

2.0 Magneto Examination

Left Type: Slick (TCM Factory Rebuilt)

Part: S6LSC-21

Serial: BL-500516-2

MFG: D05AA202R

Right Type: Bendix S6LN-204 (Airmith Magneto)

Part: 10-163050-9

Serial: A12100 411.9

Both magnetos were tested in a magneto test stand, utilizing the stands cap and wires. Both magnetos produced sparks at the leads starting at 250 RPM, and continued to produce sparks through to 3,000 RPM. The sparks fired in the firing order, and the impulse coupling for the left magneto could be heard clicking appropriately at low RPM.

2.1 Examination Photos



Photo 1 – Data Tag



Photo 2 – Inlet Screen



Photo 3 – Float Clearance

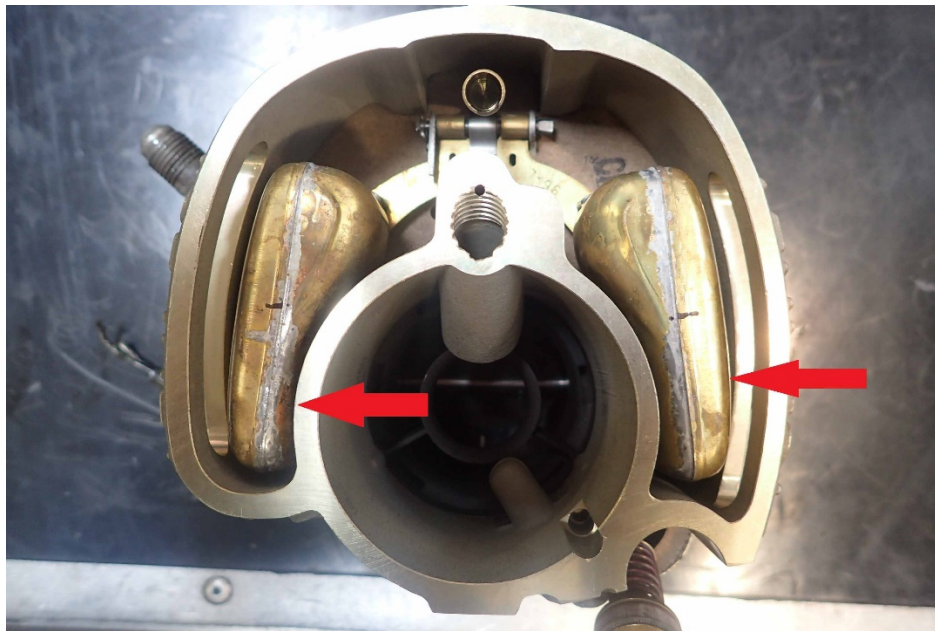


Photo 4 – Float Sidewall Clearance



Photo 5 – Float Valve Tip



Photo 6 – Accelerator Pump Discharge Valve



Photo 7- Fuel Inlet Screen Sealant



Photo 8 – Chafe Marks within Carburetor Bowl

Submitted by: Elliott Simpson