Installation Work for Alpha Systems Angle of Attack System
DSTR-AOA-9600K

05/28/2015

Aircraft Information:

Piper Arrow 200 PA-28R-200

Overall Description:

A model DSTR-AOA-9600K Angle of Attack System was installed in the aircraft as follows:

1) AOA Indicator on top center of the glare shield, near front panel edge
2) AOA Switch Panel on front panel area, co-pilot side of panel
3) AOA Interface Module on sidewall brace, behind firewall, under instrument panel
4) AOA probe and sense lines – probe installed on right wing, outboard inspection plate area

Power requirements for the AOA system is 0.25A. Power was shared with a 4A breaker for the avionics fan which is well within spec for both articles.

Audio output from the AOA system was coupled into the PS Engineering Systems PMA-6000B audio panel as unswitched audio (pin #7), always present to pilot.

The installation is a minor airframe alteration as noted in the supporting letter from the Small Airplane Directorate of the Federal Aviation Administration.

Reference Documents:

Alpha Systems AOA	Eagle Installation Manual P# AOA-9050-Eagle
Federal Aviation Administration	Small Airplane Minor Alteration Approval Letter

Installation:

Removed existing right outboard inspection panel on right wing and installed AOA probe (AOA-4027) and mounting plate. Mounting plate was trimmed to fit, prepped, primed and painted. Routed 2 sense lines in wing chase and gear inspection area to AOA probe at right outboard inspection plate station.

Note: Based on experience from other Cherokee installations, the initial angle of the probe was set to 45 degrees. This worked on the first flight without further adjustments.

Installed AOA Indicator (DSTR-AOA-9600) on top center of glare shield using aluminum channel. Verified there was no interaction with compass.

Installation (cont):

Installed AOA Panel Switch (AOA-SP-001) in front panel on co-pilot side. Interfaced audio output into PSA Engineering Audio Panel (PSA-6000B), unswitched audio, pin #7.

Installed AOA Interface Module (AOA-1859F) on right side panel brace, rear of the firewall. Connected power (0.25A required) to existing avionics cooling fan circuit breaker (4A).

Inspected the Alpha Systems AOA installation and performed the initial system power up, zero pressure set point calibration and brightness calibration procedures on the ground. All installation work was accomplished by following the Alpha Systems installation manual AOA-9050-Eagle.

Ground Calibration Test:

A ground calibration test was performed, completing the initial system power up, zero pressure set point calibration and brightness calibration procedures. Unit successfully completed calibration.

In-Flight Calibration OAA and Cruise:

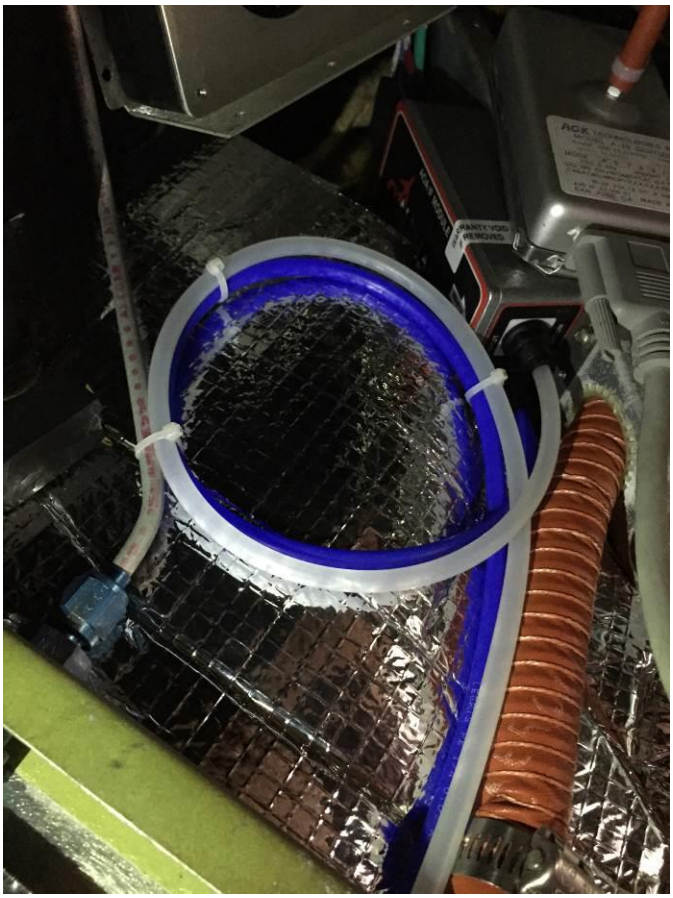
In-flight calibration of OAA and Cruise set points was accomplished based on procedures outlined in the Alpha Systems installation manual AOA-9050-Eagle. Set points were achieved with default installation of probe at 45 degrees and checked for repeatability at OAA and Cruise speeds.

Equipment Installed:

AOA Indicator on ½” Aluminum Channel

AOA Switch Panel

Location of AOA Indicator and Switch Panel



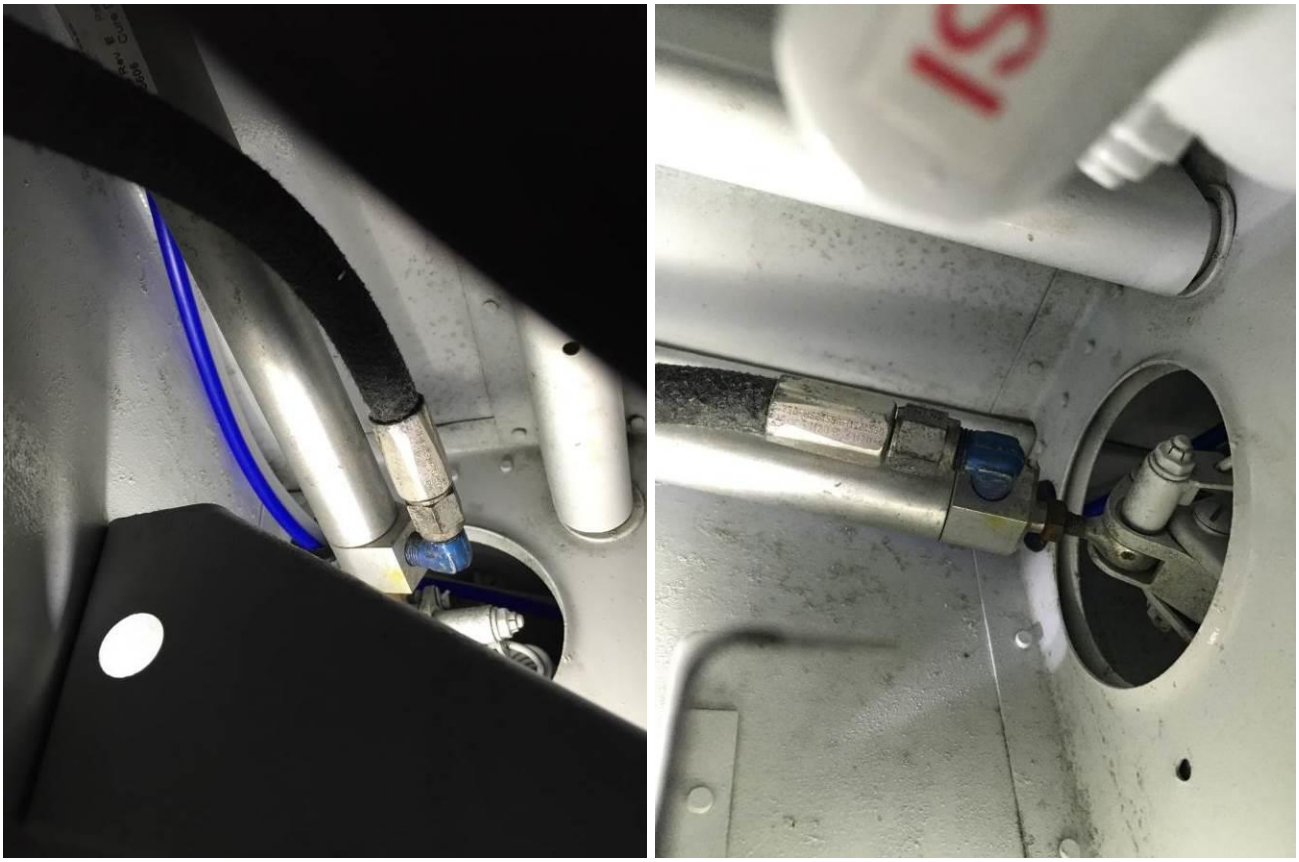
AOA Interface Module on co-pilot side brace behind firewall

Sense line routing from AOA Interface Module to right wing

Sense Line routing from right fuselage through landing gear access bay

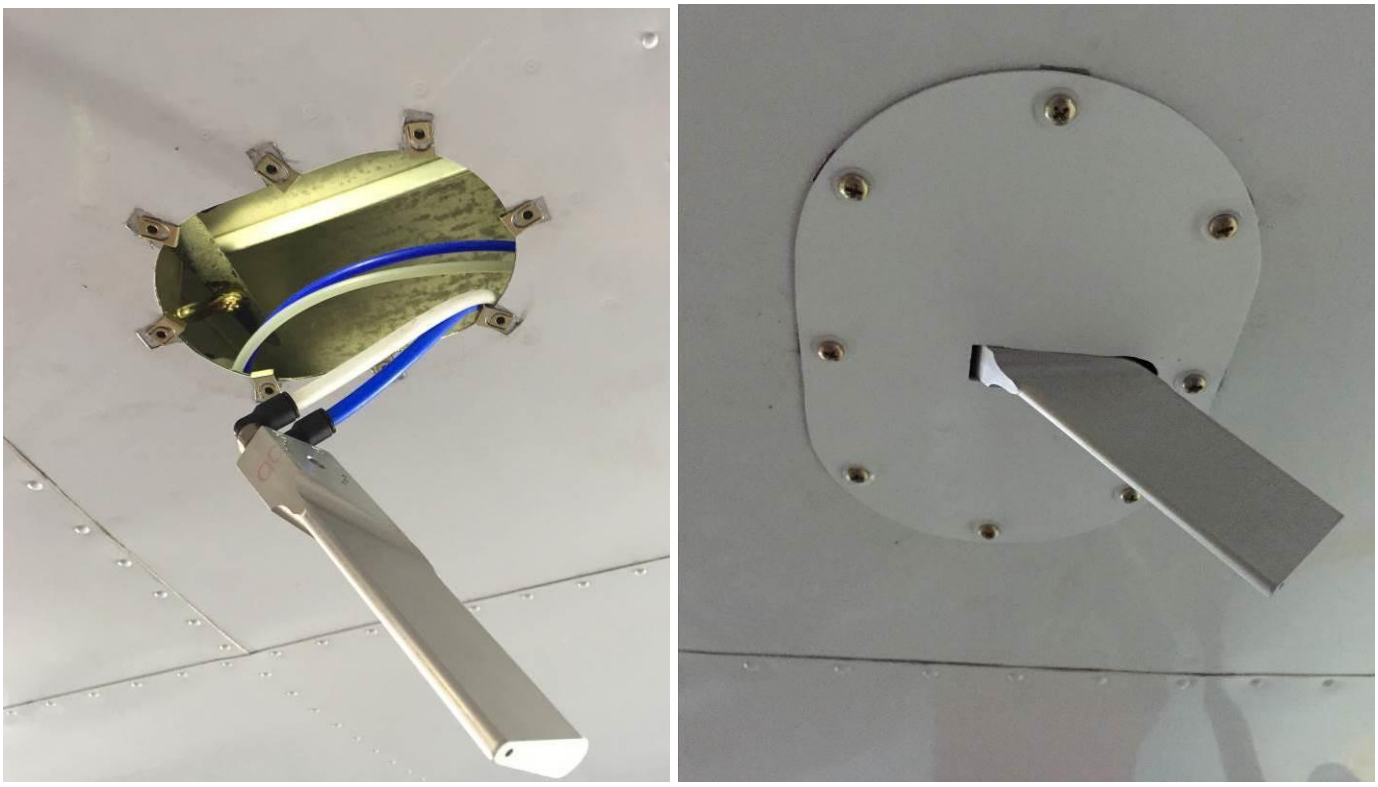
Sense line routing through landing gear bay

Sense line routing through gear access bay and into right wing



Landing gear retracted – clear of actuator

Sense line routing through wing area near outboard inspection plate
Clear of aileron cables and pivot arm



AOA Probe installed at right outboard inspection plate site