

AERO ADVANTAGE PARTNERS, LTD.

AFMS 18002

AIRPLANE FLIGHT MANUAL SUPPLEMENT

FOR STC SA10126SC

AIRCRAFT MODIFIED WITH

AERO ADVANTAGE DUAL CHAMBER VACUUM PUMP

AND MONITOR SYSTEM


Aircraft Registration No. 4508X

Serial No. 28-7690026

Model No. PA25-131

This supplement must be attached to the appropriate FAA Approved Airplane Flight Manual when the Aero Advantage Dual Chamber Vacuum Pump and Monitoring System is installed in accordance with STC SA10126SC. The information contained herein supplements or supercedes the Airplane Flight Manual only in those areas listed herein. For limitations, procedures and performance information not contained in this supplement, consult the primary Airplane Flight Manual.

FAA APPROVED



S. Frances Cox, Manager
Special Certification Office, ASW-190
Federal Aviation Administration
Fort Worth, TX 76193-0190

Dated: FEB 28 2003

LOG OF REVISIONS

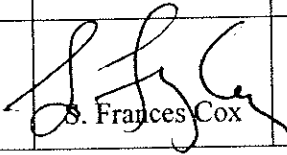
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**SECTION 1
GENERAL**

DESCRIPTIVE DATA

VACUUM PUMP

The Aero Advantage ADV 200 series vacuum pump is an engine-driven, dual-chamber, dry-vane type pump. It is mounted and powered at the engine accessory drive just like the standard vacuum pump it replaces. The pump is designed so that either chamber will continue to supply vacuum pressure should the other chamber fail. This provides redundancy and increases safety by providing a back up to a failed chamber.

VACUUM PUMP MONITOR SYSTEM

The vacuum pump monitor system consists of two LED annunciators installed on the instrument panel in front of the pilot that are powered by the aircraft electrical bus and switched by electro pneumatic pressure switches. When operating at normal engine speeds, the switches are held open by vacuum pressure inside the respective pump chamber to which it is plumbed. When pressure inside a chamber drops below normal, the switch closes and the corresponding annunciator illuminates. Illumination of an annunciator indicates to the pilot that the vacuum pump chamber pressure is below 3.5 Inches Hg.

**SECTION 2
LIMITATIONS**

The limitations included in this section are approved by the Federal Aviation Administration and are mandatory.

SYSTEMS AND EQUIPMENT LIMITATIONS

VACUUM POWERED AUTOPILOT

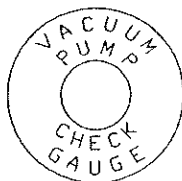
Autopilot must be OFF whenever monitor system indicates a vacuum pump chamber has failed.

VACUUM PUMP MONITOR SYSTEM

Do not takeoff with one or both vacuum pump chambers failed as indicated by illumination of a monitoring system annunciator.

PLACARDS

The following placard shall be installed and located around each of the monitoring system's LED annunciators.



The following placard shall be located on the instrument panel in the pilot's primary view.

THIS AIRCRAFT IS EQUIPPED WITH A VACUUM PUMP MONITORING SYSTEM
FOR OPERATING INSTRUCTIONS AND LIMITATIONS, SEE AIRPLANE FLIGHT
MANUAL SUPPLEMENT

SECTION 3 EMERGENCY PROCEDURES

For procedures other than those listed below, refer to the primary Airplane Flight Manual.

NOTE

The vacuum/pressure gauge remains the primary indication of vacuum system operation. The pilot should verify adequate vacuum/pressure is indicated before continuing flight with an annunciator illuminated.

VACUUM PUMP MONITOR SYSTEM ANNUNCIATOR(S) ILLUMINATED

If vacuum gauge indication is above 3.5 In.-hg:

1. Continue flight at engine rpm and aircraft altitude levels to maintain 3.5 In.-hg vacuum gauge reading.
2. If in instrument meteorological conditions exit to visual meteorological conditions and remain in visual meteorological conditions for the remainder of the flight or if flight in visual meteorological conditions cannot be established and maintained land as soon as practical.

If vacuum gauge indication is less than 3.5 in.-hg:

1. Attempt to establish a 3.5 In.-hg. vacuum gauge reading by increasing engine rpm or decreasing aircraft altitude, if possible.
2. If **unable** to establish a 3.5 in.-hg or greater vacuum gauge reading **disregard** the indications of all air powered instruments.
3. If in instrument meteorological conditions land as soon as practical, if in visual meteorological conditions remain in visual meteorological conditions for the remainder of the flight.

WARNING

If autopilot utilizes vacuum gyros, DO NOT USE autopilot when vacuum/pressure indication is not normal.
See Section 2 - Limitations for vacuum powered autopilots

**SECTION 4
NORMAL PROCEDURES**

BEFORE STARTING ENGINE

1. Master switch - ON.
2. Vacuum pump monitor annunciators - ILLUMINATED.

WARNING

If one or both annunciators do not illuminate, monitor system has malfunctioned. Do not takeoff until system malfunction has been corrected and system is operating properly.

BEFORE TAKEOFF

1. Perform engine run-up.
2. Verify vacuum pump monitor annunciators - EXTINGUISHED (Vacuum/pressure above 3.5 In. Hg).

NOTE

Vacuum pump flow capacity is reduced at low engine rpm. Illumination of one or both monitoring system annunciators is normal at low engine rpm.

**SECTION 5
PERFORMANCE**

No change to aircraft performance

**SECTION 6
WEIGHT & BALANCE**

There are no changes to the aircraft weight limits or center of gravity limits. See the Airplane Flight Manual for weight and center of gravity information.

The Equipment List / Weight and Balance Record are revised by the STC installer for removal of original vacuum pump, and the installation of the Aero Advantage vacuum pump and monitoring system. For current empty weight and CG, see revised weight and balance record.

SECTION 7 SYSTEMS DESCRIPTION

GENERAL

This section describes the systems altered by this STC to install the Aero Advantage dual chamber vacuum pump and monitor system. For descriptions of other systems on the aircraft, refer to the primary Airplane Flight Manual.

DUAL CHAMBER VACUUM PUMP

The Aero Advantage ADV 200 series pump is an engine-driven, dual-chamber, dry-vane rotor type vacuum pump. It is mounted on the engine accessory pad and is driven through the engine accessory case just as a standard vacuum pump. Normal operation of the pump is with both chambers pumping. Should one of the chambers fail, the pump will continue to supply vacuum pressure using the remaining operating chamber. This feature provides redundancy in the case of pump rotor failure. When operating on a single chamber, pump capacity is reduced.

The ADV200 series dual rotor vacuum pumps were designed around single rotor vacuum pump operations, below 14,000 feet in aircraft that incorporate two air driven gyroscopic instruments. Additional gyroscopic instruments or flights above 14,000 feet **while the vacuum pump is operating on a single rotor** requires additional vacuum pump capacity and has not been tested with the ADV200 series dual rotor vacuum pumps.

VACUUM PUMP MONITOR SYSTEM

The vacuum pump monitor system is design to alert the pilot whenever a failure of a vacuum pump chamber occurs. The system includes two LED annunciators installed near the gyro-instruments that illuminate when vacuum in the respective pump chamber is low. Power to the annunciators is switched by two separate electro-pneumatic pressure switches. Each pressure switch is plumbed independently to small pressure ports on the fore and aft chambers of the vacuum pump. The switches close whenever vacuum is below 3.5 in. Hg. (± 0.4 In. Hg). Each annunciator is powered through an independent circuit by the main electrical bus and is protected by a 2 ampere fuse. When operating the monitor system draws less than 1 ampere.

Note when the vacuum pump monitoring system indicates that a single chamber failure has occurred engine operations at low RPM, or operations above 14,000 feet may cause the other warning lamp indicator to illuminate due to insufficient air being delivered to the air-powered instruments.

**SECTION 8
HANDLING, SERVICING, AND MAINTENANCE**

There are no changes to the aircraft handling or servicing. For additional maintenance information, refer to the Instructions for Continued Airworthiness contained in Aero Advantage document no. ADVMSI 500.



U.S. Department
of Transportation

**Federal Aviation
Administration**

Southwest Region
Arkansas, Louisiana,
New Mexico, Oklahoma,
Texas

Fort Worth, Texas 76193-0000

1 APR 18 2003

Mr. David Boldenow
Aero Advantage
P.O. Box 5584
Granbury, TX 76049

Dear Mr. Boldenow:

Enclosed is Supplemental Type Certificate (STC) **SA10126SC** reissued on March 27, 2003, to correct the approved model list (AML). The STC approves the installation of Aero Advantage ADV200 series vacuum pump.

Sincerely,

S. Frances Cox
Manager, Special Certification Office,
Aircraft Certification Service

Enclosure