



UND AEROSPACE

“ Global Excellence Through Innovative People ”

**Cirrus SR-20
Vacuum System**

12/23/03

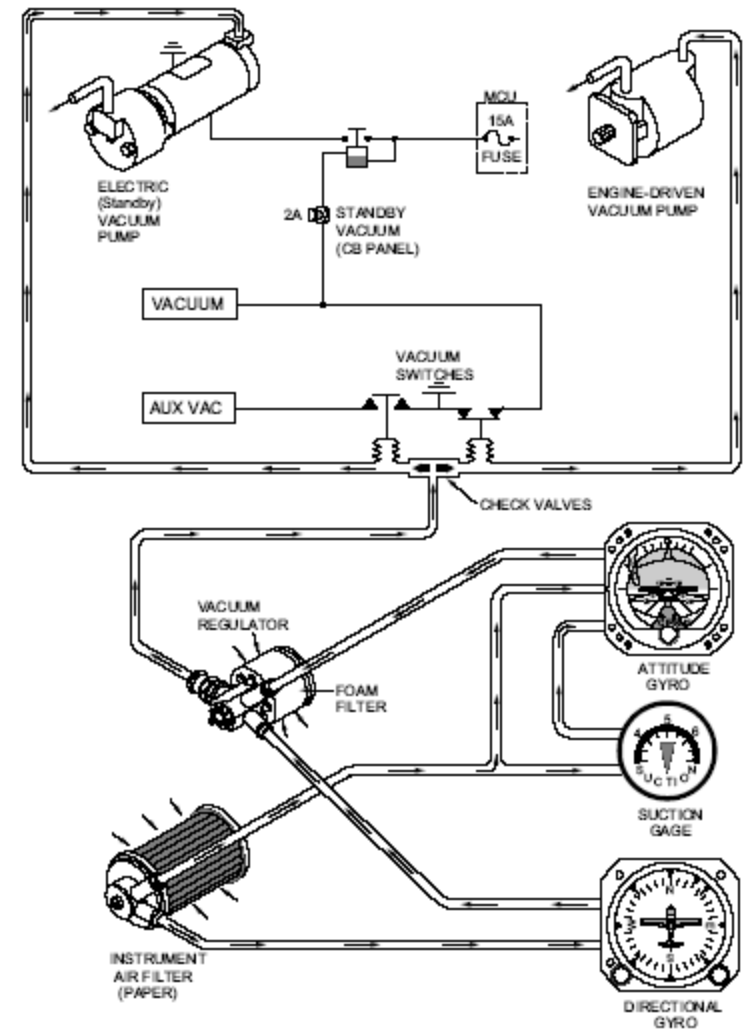
The system information, procedures and guidelines found in this presentation are for Reference Only.

The information & procedures in this presentation have been taken from the FAA Approved Airplane Flight Manual and Pilot's Operating Handbook (POH). The Information & Procedures in this presentation DO NOT SUPERSEDE the Information & Procedures in the POH. In the event of conflict, the POH shall take precedence.



Vacuum System Components

- ▶ **Engine-driven vacuum pump**
- ▶ **Electric back-up vacuum pump**
 - 15 Amp fuse on primary bus in the MCU
 - 2-amp STANDBY VACUUM circuit breaker on the circuit breaker panel
 - Automatically turns on and requires no pilot action
- ▶ **Two vacuum switches**
- ▶ **Two annunciators**
 - VACUUM warning light
 - AUX VAC caution light
- ▶ **A vacuum manifold**
- ▶ **Vacuum regulator**
- ▶ **Vacuum system air filter**
- ▶ **Vacuum driven instruments**
 - Attitude Indicator
 - Directional Gyro (heading indicator)
 - Suction Gauge



Vacuum System Operations

▶ Standby Electric Pump

- For extended ground maintenance, disable standby vacuum pump by pulling the **STANDBY VACUUM** circuit breaker to prevent battery drain.
- Normal indications during engine start
 - Red vacuum light will illuminate and **AUX VAC** light will illuminate, and electric vacuum pump will start. After short delay, the attitude indicator **GYRO** flag will go out of view.
 - After engine start, the red **VACUUM** annunciator and **AUX VAC** light will go out and electric pump will turn off.



Vacuum Annunciators

▶ Vacuum Warning Light

- Failure of the engine driven vacuum pump or that the engine is not operating.
- Low vacuum pressure in the line.

▶ AUX VAC Caution Light

- Indicates that the electric driven vacuum pump is supplying vacuum.



Vacuum Instruments

▶ Attitude Gyro

- Visual indication of flight attitude
 - **Bank markings**
 - 10, 20, 30, 60, and 90 degrees
 - Gyro can follow maneuvers through 360 degrees in roll and 360 degrees in pitch.
 - **Red Gyro flag indicates insufficient vacuum for operations.**
 - Upon start, the flag pulls when vacuum passes approximately 4 inches Hg differential.
 - If vacuum differential approaches 1 inch Hg, flag drops into view.



Vacuum Instruments

- ▶ **Directional Gyro**
 - Displays airplane heading by rotating a compass dial in relation to a fixed simulated airplane image and lubber line.
 - Will precess slightly during flight and should be periodically re-adjusted.



Vacuum Instruments

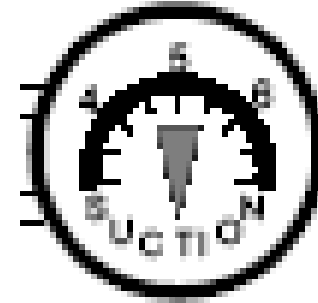
- ▶ **Horizontal Situation Indicator**
 - **NSD-360 HSI (Vacuum driven)**
 - Flux detector in right wing
 - Free gyro slave switch
 - Red Gyro flag indicates vacuum pressure insufficient for gyro operation
 - 2-amp HSI circuit breaker on the Essential Bus
 - **NSD-1000 HSI (Electric driven)**
 - Flux detector in right wing
 - Free gyro slave switch
 - Red Gyro flag indicates loss of electrical power
 - 2-amp HSI circuit breaker on the Essential Bus
 - **Sandel HSI (Electric driven)**
 - See Sandel PowerPoint presentation



Vacuum Instruments

▶ Suction Gauge

- Located on far right side of instrument panel.
- Calibrated in inches of Mercury (Hg).
- Desirable range is 4.5 to 5.4 inches of Hg.
- Attitude and directional gyro should be considered unreliable if suction gauge is out of this range.



Vacuum System

▶ Any Questions?

