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Pneumatic Systems

AIRCRAFT PNEUMATIC SYSTEMS USE AIRFLOW TO PRODUCE EITHER vacuum or pressure for driving gyro instruments, operating de-icing boots, maintaining cabin pressurization, and performing other pressure-related chores.

Aircraft of a few years ago were equipped with venturis mounted on the fuselage in line with the propwash, as shown in Figure 2-14. A venturi is basically a tube flared at the ends and constricted in the middle. As the speed of the air passing through the constricted part of the tube increases, the pressure of the air decreases, thus creating a vacuum, as illustrated in Figure 15-1. The venturi-driven vacuum system is relatively effective for cruise flight but highly susceptible to icing and virtually unusable during ground operations.

WET-PUMP SYSTEMS

To solve the icing problem, an engine-driven vacuum pump system was developed. The pump, shown in Figure 15-2, is impervious to icing, is mounted on the accessory section of the engine, and uses engine oil for both lubrication and cooling; hence they are called "wet" pumps. Air from the cabin is pulled through the gyros and into the pump, which is lubricated with engine oil. An oil separator then returns most of the oil to the engine and exhausts the air and any residual oil out of the system.