



Figure 3-34. A typical turbofan intake section.

as mentioned earlier. Inside the inlet by the fan blade tips is an abraidaible rub strip that allows the fan blades to rub for short times due to flightpath changes. [Figure 3-35] Also, inside the inlet are sound-reducing materials to lower the noise generated by the fan.

The fan on high-bypass engines consists of one stage of rotating blades and stationary vanes that can range in diameter from less than 84 inches to more than 112 inches. [Figure 3-36] The fan blades are either hollow titanium or composite materials. The air accelerated by the outer part of the fan blades forms a secondary airstream, which is ducted overboard without passing through the main engine. This secondary air (fan flow) produces 80 percent of the thrust in high-bypass engines. The air that passes through the inner part of the fan blades becomes the primary airstream (core flow) through the engine itself. [Figure 3-36]

The air from the fan exhaust, which is ducted overboard, may be discharged in either of two ways:



Figure 3-35. Rubber stripping inside a turbofan engine inlet allows for friction for short periods of time during changes in the flightpath.



Figure 3-36. The air that passes through the inner part of the fan blades becomes the primary airstream.

1. To the outside air through short ducts (dual exhaust nozzles) directly behind the fan. [Figure 3-37]
2. Ducted fan, which uses closed ducts all the way to the rear of the engine, where it is exhausted to the outside air through a mixed exhaust nozzle. This type engine is called a ducted fan and the core airflow and fan airflow mix in a common exhaust nozzle.

Reciprocating Engine Exhaust Systems

The reciprocating engine exhaust system is fundamentally a scavenging system that collects and disposes of the high temperature, noxious gases being discharged by the engine. Its main function is to dispose of the gases with complete safety to the airframe and the occupants of the aircraft. The exhaust system can perform many useful functions, but its first duty is to provide protection against the potentially destructive action of the exhaust gases. Modern exhaust



Figure 3-37. Air from the fan exhaust can be discharged overboard through short ducts directly behind the fan.