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A photograph of a medium pressure pneumatic system. The image shows a dense array of blue pneumatic hoses connected to a metal manifold. In the foreground, four silver-colored pneumatic fittings with black and blue protective caps are visible. The background shows more of the system's components, including additional hoses and metal structures.

Medium Pressure Pneumatic System

SOURCES

- **Pressure Range- 35 to 150 Psi**
- **Does not include an air bottle/storage reservoir**
- **It draws air from the compressor section of a turbine engine, this is known as bleed air.**
- **Medium Pressure Pneumatic System is used to provide pneumatic power for engine starts, engine de-icing, wing de-icing, air conditioning and hydraulic power also used to pressurize the aircraft's hydraulic reservoirs, anti-ice the TAT probe and other applications specific to particular aircraft**

- **Ground sources of pneumatic air also are used.**
- **Fixed and portable cart type units containing engine-driven air supply compressors are connected into the pneumatic manifold to power the pneumatic system without running the engines.**

STORAGE

- **Bleed air pneumatic systems normally do not store pneumatic air in any particular container like the reservoir bottles of a high pressure pneumatic systems.**
- **Each turbine engine and the APU supply the bleed air.**
- **A shutoff or regulating and shutoff valve is typically located between the engine bleed air tap-offs and the pneumatic ducting that makes up the pneumatic manifold.**
- **A shutoff type valve is also used to control the flow of pneumatic air from the APU.**

- The **pneumatic manifold**, which is typically 4 inch diameter ducting, may be considered a storage location.
- It is located downstream of the pneumatic shutoff valves from the engines and APU.
- Control valves allow pneumatic air to be routed from the manifold into pneumatically powered components such as engine starters, pneumatically driven hydraulic pumps, and into the wing anti-ice ducts and air conditioning packages.

PRESSURE CONTROL

- **Airliner pneumatic system pressure control begins with control of engine compressor bleed air.**
- **Intermediate stage compressor bleed air normally supplies the bulk of the pneumatic system demand.**
- **In time high demand or reduced engine throttle, a second, and sometimes a third tap off of high stage compressor bleed air is combined with intermediate stage air to main sufficient volume for operating pneumatic system component demands.**
- **Various pressure regulating and sourcing valves are used to deliver the optimum volume of air into the pneumatic manifold at any given time.**

- **Shut off Valves are positioned to maintain volume requirements by manipulating valve positions to maintain a set pressure in the manifold.**
- **Pressure relief valves are provided to protect pneumatic ducts from excessive pressure.**
- **Relief settings on some Boeing 737's are in the 80-110 psi range.**

DISTRIBUTION

- **The pneumatic manifold, which is itself ducting, distributes the air through the use of control valves leading to various pneumatic systems components and sub-systems.**
- **There is a limit to the amount of ozone present in the pneumatic air processed by the air conditioning system that is sent to the cabin.**
- **Above the limit, passengers experience symptoms such as headache, respiratory problems, and even cancer with long term exposure.**
- **A swirling motion is induced such that the heavier particulates are separated.**



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