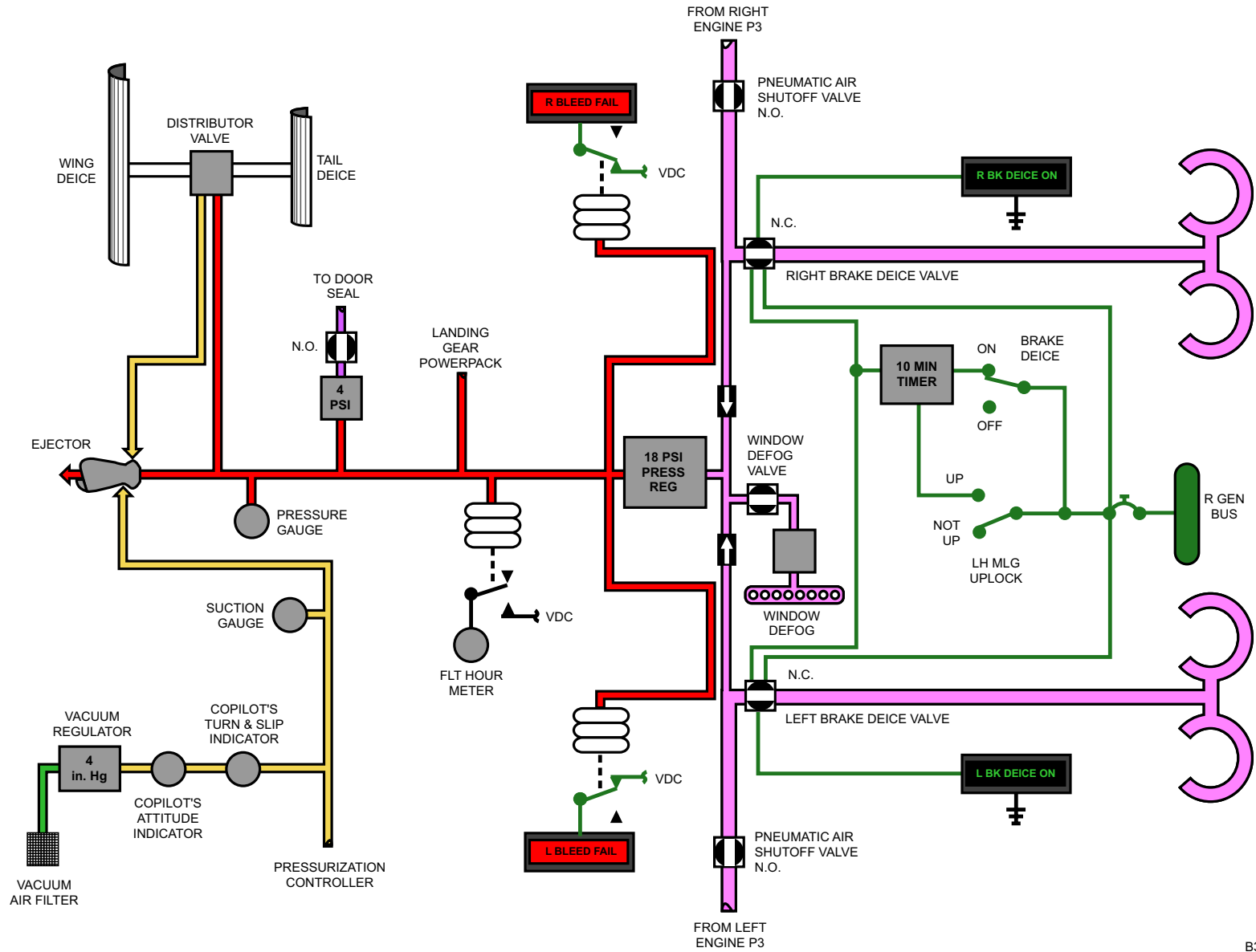


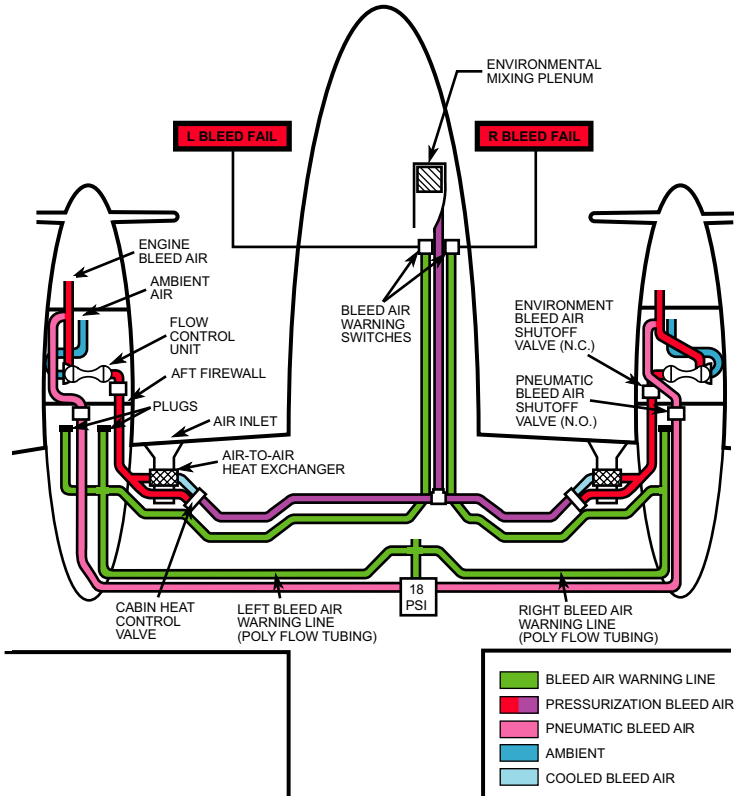
# Pneumatic System



B3CRH-PN0011



# Bleed Air Warning System



B3CRH-EV001i

## **Pneumatic Systems**

The pneumatic systems include the following:

- brake deice
- window defog
- windshield washer (optional)
- bleed air warning
- hydraulic power pack fluid head pressure
- flight hour meter
- door seal
- surface deice
- vacuum venturi.

## **Bleed Air Supply**

The bleed air system extracts bleed air from the engine's compressor section and transfers it to various aircraft systems. The pneumatic side of the supply is for surface deice, brake deice, and door seal. In addition, a venturi-ejector in the system creates a vacuum source for the air-driven gyros, pressurization control, and deflation of the deice boots. The environmental supply is for air conditioning and pressurization.

A pair of BLEED AIR VALVES switches controls bleed air supply. With the switches in the OPEN position, both the ENVIR and PNEU shutoff valves open to supply engine bleed air. Placing the switches in ENVIR OFF stops bleed air flow to the environmental system (air conditioning and pressurization) by closing the environmental shutoff valve. Placing the switches in PNEU & ENVIR OFF stops bleed air flow completely by closing both environmental and pneumatic shutoff valves for the selected side. The ENVIR valve is a normally closed valve, while the PNEU valve is a normally open valve.

The pneumatic instrument bleed air flows from the shutoff valve to a tee-fitting where the left and right engine bleed air supplies combine. Check valves in each supply line prevent reverse bleed air flow when an engine is not operating. The combined bleed air supply then flows through an 18 PSI pressure regulator. Bleed air from the 18 PSI regulator produces the vacuum.

### Operation

Bleed air at a maximum flow rate of 1 to 1½ lb/min and at pressures reaching 150 PSI is obtained from both engines and flows through pneumatic lines to a common tee located in the fuselage. Check valves prevent reverse flow during single engine operation. Downstream from the tee, all bleed air passes through an 18 PSI regulator which incorporates a relief valve set to operate at 21 PSI in case of regulator failure. This regulated bleed air is manifolded to supply pneumatic pressure to the surface deicers, door seal, bleed air failure warning system and the cabin window defrost system, and to provide forcing flow and pressure for the vacuum ejector.

Bleed air is extracted from the third stage of the engine compressor at temperatures reaching 1,000°C and is cooled approximately 70°F above ambient temperature at the tee in the fuselage, due to heat transfer in the pneumatic plumbing.

### Bleed Air Warning

A bleed air warning system is provided to warn of excessive heat caused by bleed air line rupture or leakage. A failure is indicated by the illumination of the L BL AIR FAIL or R BL AIR FAIL light in the warning annunciator panel. With the indication of bleed air line failure, the bleed air for that side should be turned off by placing the respective lever-lock BLEED AIR VALVE switch on the copilot's left subpanel in the PNEU & ENVIR-OFF position. The bleed air warning system consists of pressurized plastic tubing that will melt when exposed to excessive heat. Therefore, the bleed fail lights will not extinguish when the bleed air valve is turned off.

