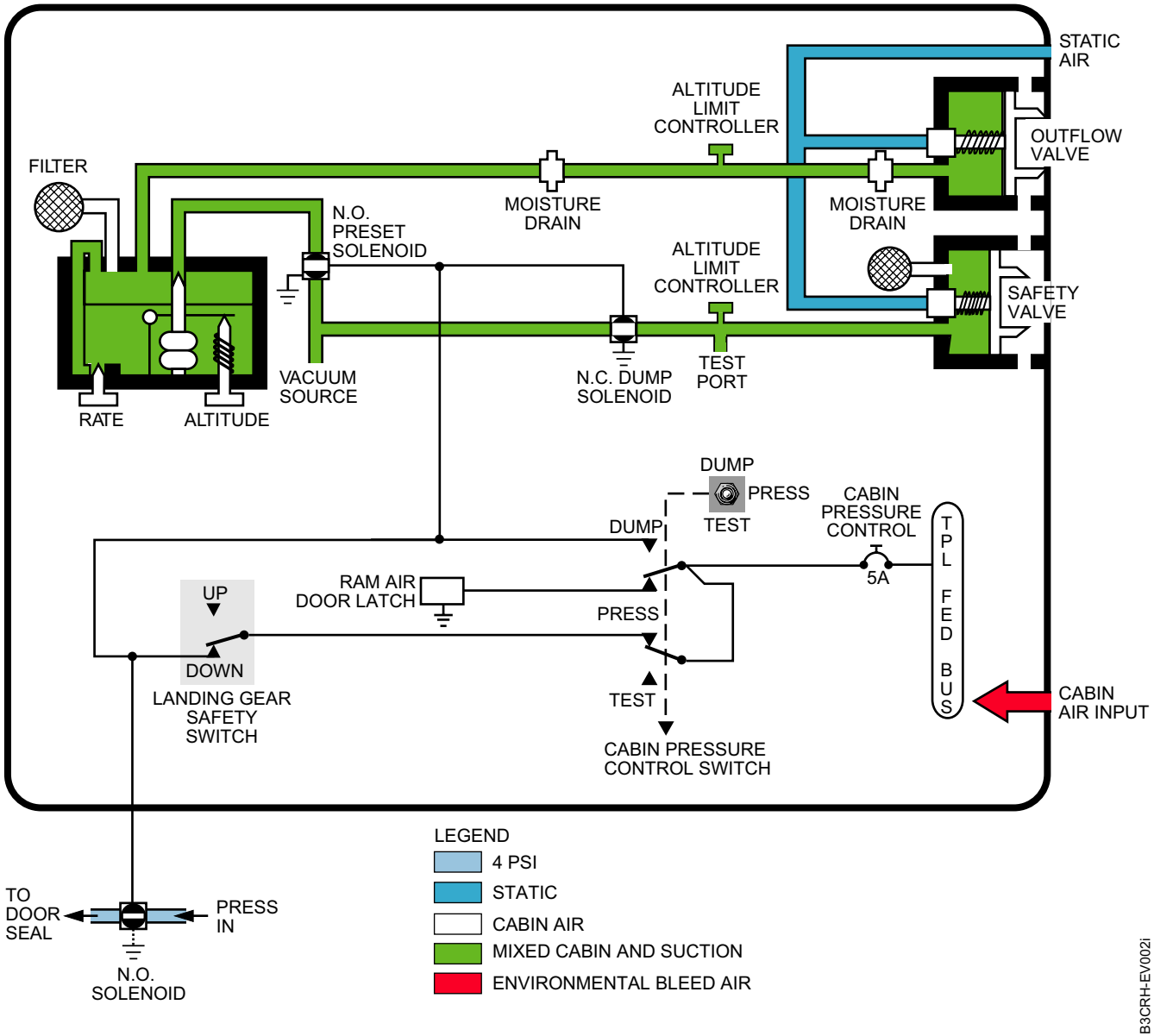
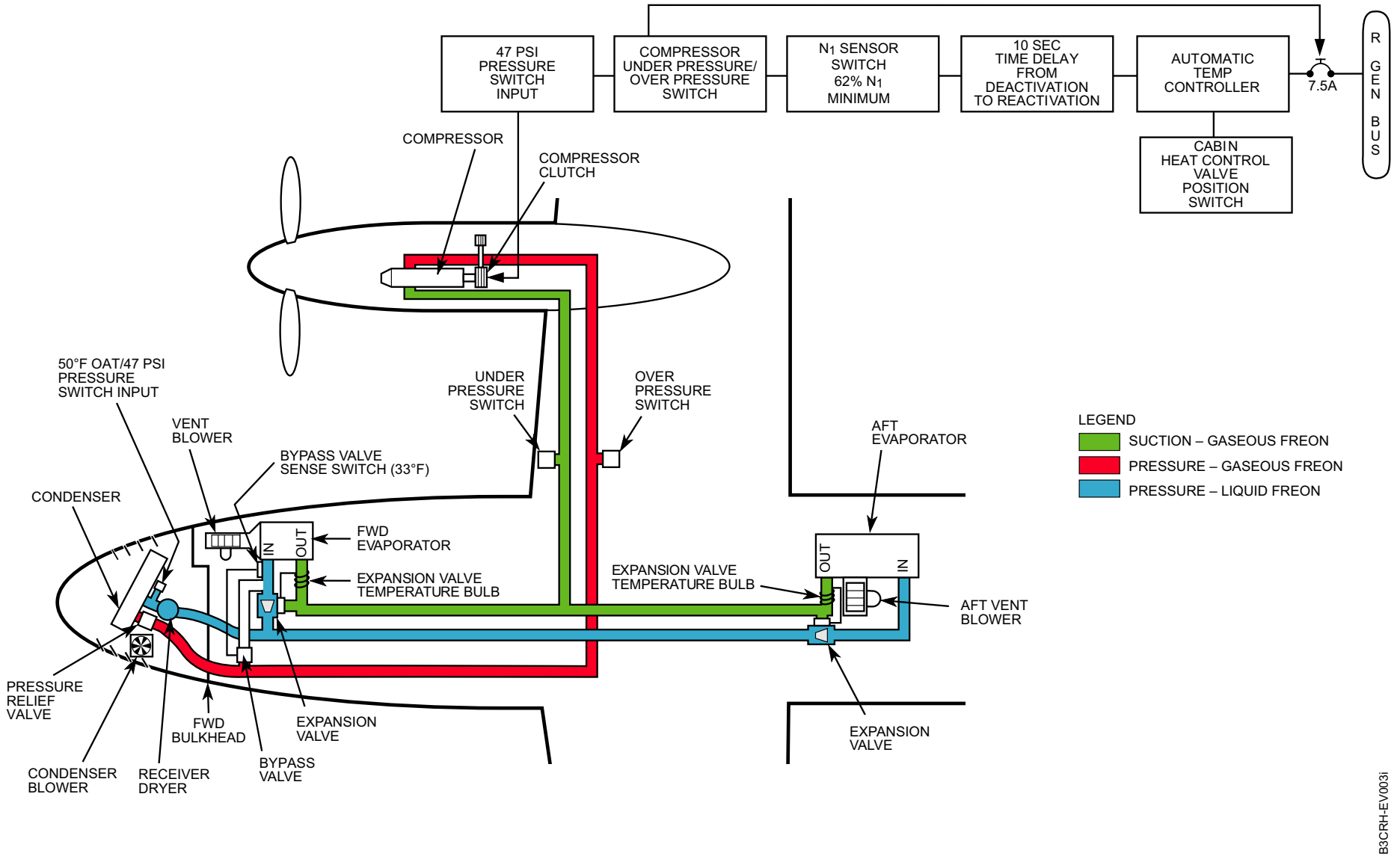
Pressurization System

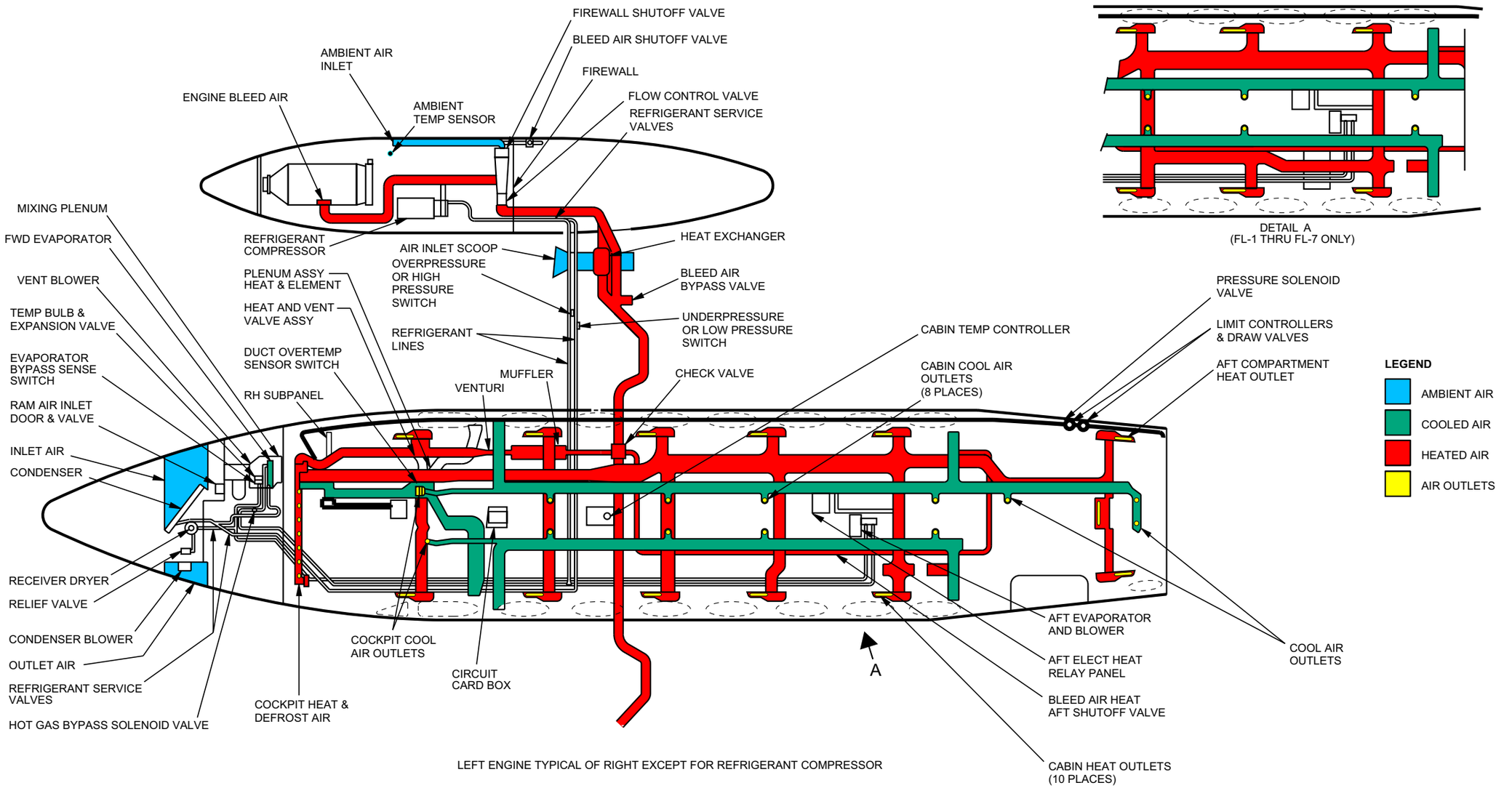


Air Conditioning System



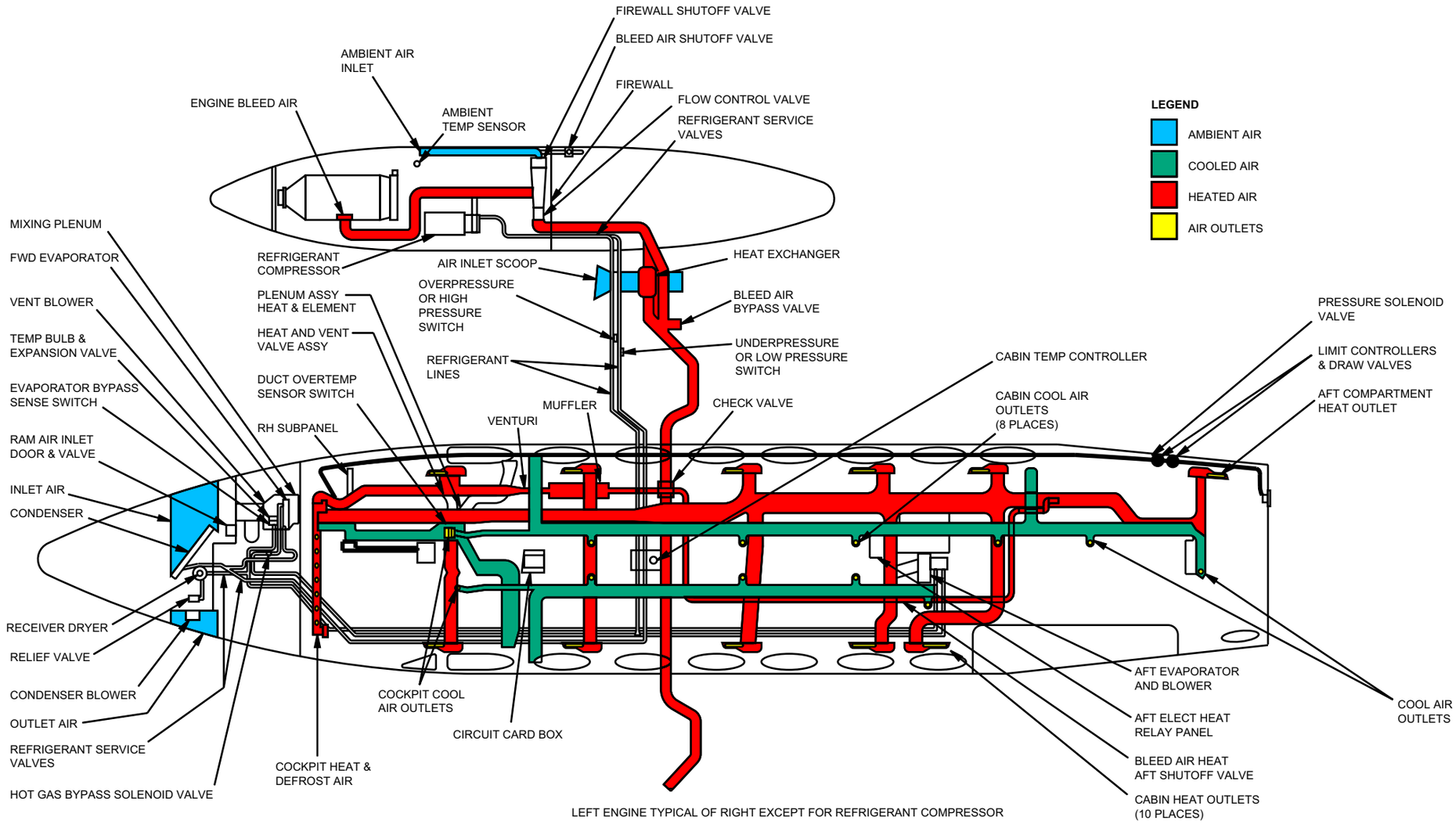
Air Distribution System

B300



Air Distribution System

B300C



Environmental Systems

This environmental section includes the following systems:

- bleed air supply (pneumatic system)
- air conditioning system
- heating system
- pressurization system
- ventilation system.

Bleed Air Supply

The pressurization air in-flow system consists of a bleed air flow control unit (FCU) for each engine that is controlled by two three-position switches placarded BLEED AIR VALVES/LEFT/RIGHT in the ENVIRONMENTAL controls group on the copilot's left subpanel. The three switch positions are placarded OPEN/ENVIR OFF/PNEU & ENVIR OFF. When a switch is in either the ENVIR OFF or the PNEU & ENVIR OFF position, the respective right or left FCU is closed. When a switch is in the OPEN position, the air mixture will flow through the FCU toward the cabin.

Environmental bleed air flow volume is controlled by the switch placarded ENVIR BLEED AIR/NORMAL/LOW in the ENVIRONMENTAL controls group on the copilot's left subpanel. This switch should be placed in the LOW position during operation in ambient temperatures above 10ºC for increased cabin cooling. The NORMAL position should be used for increased heating or if increased pressurization air flow is required.

Air Conditioning System

The air conditioning system utilizes refrigerant to provide cooling for the airplane cabin. Airplane serials FL-1 to FL-126 and FM-1 to FM-8 use refrigerant R-12. For airplane serials FL-127 and after, FM-9 and after, and aircraft with Beechcraft Kit 130-5009, use refrigerant R-134a. A compressor plus one condenser with a 36,000-BTU capacity, and two 12,500-BTU evaporators are utilized to cycle the refrigerant from a gas to a liquid state to provide cooling of the passenger compartment and flight compartment. Adjustable outlets, located in the headliner in the passenger compartment and in the flight compartment overhead panel, distribute cool air produced by the air conditioning system.

The temperature control switches used to control the heating systems are also used to control the air conditioning system. The cabin temperature mode switch, the cabin temperature selector, and the manual temperature control switch are located on the copilot's inboard subpanel. Refer to the King Air 350 Maintenance Manual chapter 21-60-00 for further information on the operation of the temperature controls.

The compressor, driven by the right engine, will operate as required in the MANUAL COOL or AUTO temp control mode, provided operation is not prohibited by the system protection controls. System protection controls will prevent compressor operation if refrigerant pressure is too high or too low, if the ambient temperature is below approximately 10°C, or if right engine speed is below 62% N_1. If operation is prevented due to low N_1 speed, the white AIR COND N_1 LOW annunciator will illuminate.

The forward vent blower recirculates cabin air through the forward evaporator and into the cabin distribution ducts. An aft evaporator is installed in the aft blower plenum. Cooling is available from this evaporator when the air conditioning system and the aft blower are operating.

Heating

Engine bleed air, through the environmental flow control valves, is utilized to warm the cabin.

Air outlets are provided for each pilot under the instrument panel. These outlets are regulated by the PILOT AIR knob and the COPILOT AIR knob located on the respective pilot's subpanel just below and outboard of the control columns. The air supply for windshield defrost and glareshield eyeball air outlets is controlled by the DEFROST AIR/PULL ON knob located on the pilot's right subpanel just below and inboard of the control column. Air flow division between cockpit floor outlets and cabin floor outlets is regulated by the control knob located on the copilot's left subpanel just below and inboard of the control column placarded CABIN/COCKPIT AIR/PULL/INCR COCKPIT/DECR CABIN. If the temperature in the duct supplying the floor level outlets becomes excessive, the yellow DUCT OVERTEMP caution annunciator will illuminate.

Cockpit and cabin side windows are defogged by supplying regulated bleed air through a manifold assembly and discharge nozzles located between window panes. The system is activated by the switch labeled WINDOW DEFOG.

Supplemental Electric Heating

A supplemental electric heating system is available for cabin comfort. It is operated by a switch in the ENVIRONMENTAL group on the copilot's left subpanel placarded ELEC HEAT/OFF. This system can be used in conjunction with a high capacity auxiliary power unit for warming the cabin prior to starting the engines, and it can be used as supplemental heat for ground operation only. It should be used in conjunction with the manual heat or auto temp control mode only.

This system uses one forward heating element located in a forward duct and one aft heating element located in the aft evaporator plenum. Both the forward and the aft blower must be operating during electric heat operation. An ELEC HEAT ON advisory annunciator is provided to indicate that the power relays are in the closed position to apply electrical power to the heating elements. When the electric heat system is selected to OFF, the ELEC HEAT ON annunciator must be extinguished to indicate that power is removed from the heating elements before the blowers are switched OFF.

NOTE: The electric heat system will draw approximately 300 amps.

Supplemental Radiant Heating (B300C)

On the B300C, a radiant heater element is installed in the cargo door. It is controlled by the Cabin Temperature Mode switch and it operates in all heating modes. This unit provides supplemental heat to the cabin for additional passenger comfort.

Supplemental Aft Cabin Heat

Supplemental aft cabin bleed air heat is controlled by a switch in the ENVIRONMENTAL group placarded AFT HEAT/OFF. This system provides additional bleed air heat in the aft cabin area. Unless passengers are seated aft of the aft partition, use of the system is not recommended in flight.

Ventilation

Fresh air ventilation is provided from two sources. One source, which is available during both the pressurized and the unpressurized mode, is the pressurization in-flow system. The second source of fresh air, which is available during the unpressurized mode only, is ambient air obtained (through a check valve) from the condenser section in the nose of the airplane.

Pressurization

The pressurization system controls cabin altitude, climb rate and descent rate by operating outflow valves that vent conditioned air to the atmosphere.

The cabin pressurization system is designed to provide a normal working pressure differential of 6.5 ±0.1 PSI, which will provide cabin pressure altitudes of approximately 2,800 ft at an airplane altitude of 20,000 ft; and 10,380 ft at 35,000 ft. If the system malfunctions and cabin pressure differential exceeds the system's maximum value, a safety valve dumps excess pressure to the atmosphere.