G650 Air Conditioning System

- 71° for cockpit
- 73° for fwd cabin
- 70° for aft cabin
Pneumatic System

Provides

High Pressure

Temperature

Air

Air Conditioning System
Air Conditioning System

Controls

Quality & Quantity of Air Entering Vessel
Pressurization System

Controls

Cabin air exiting vessel via:

Thrust Recovery Outflow Valve (TROV)

Pressure Relief Valve (PRV) (backup)

In order to achieve:

Optimum cabin pressure
Air Conditioning Controllers (ACCs)

The air conditioning system is regulated by two (2) identical and interchangeable microprocessors:

- Brains of the air conditioning system
- Located in the AEER near the BACs
The L ACC and R ACC make all the logical decisions associated with the Air Conditioning System.

Modular Avionics Units

MAU #1 | MAU #2 | MAU #3

L ACC | R ACC

L Pack | R Pack

Produce | Control

Cockpit/Cabin Temperature

Cool, conditioned, dehumidified air

Cold/HOT knobs

Air Conditioning Control Panel
The **Air Conditioning System** has three main functions:

1. **Airflow control for use by the Pressurization System**

2. **Cabin and Cockpit temperature control**

3. **Equipment cooling**
Air Conditioning Packs

- Commonly referred to as Environmental Control System (ECS) packs

- The L Pack and R Pack are identical and are located in the tail compartment.

- The L Pack and R Pack are pneumatically powered by high pressure air (5th or 8th stage bleed air) downstream from the precooler.
- The left and right packs produce:

Cool, conditioned, dehumidified air

Trim Air

Common Cold Air Manifold

35°F

Hot Air Manifold

Up to 40 Psi

400°F
TEMPERATURE/ZONES

![Diagram showing temperature zones in an airplane]

- **Auto**: 60-90°F
- **Man**: 35-230°F

3 X ZONES
- **Cockpit**: 71°F
- **FWD Cabin**: 73°F
- **AFT Cabin**: 70°F

Cold/Hot Knobs

**Common Cold Air Manifold** + **Trim Air** = **Zone Temperature**
**Engine Start**

- **Start Master** or **Crank Master** = **R Pack**
  - ON or ON = OFF

- **L Eng Start** or **R Eng Start** = **L Pack**
  - ON or ON = OFF

- **L/R Eng Start Complete** or **Crank Master** + **OFF** = **L Pack**
  - ON

*Prevents large pressure bumps during engine start*
**Main Entrance Door**

- **MED Switch** selected **closed**

  - **L Pack**
  - **R Pack**
  - **OFF**
  - **OFF**

- **MED Closed and locked**
  - **L Pack**
  - **R Pack**
  - **ON**
  - **ON**

  > **10 seconds**
RAM AIR

- **RAM AIR** intake is located on top of the fuselage and in front of the tail.

- Outside air forced into Dorsal Fin Air Intake in flight.

- Delivered via dual ducted Plenum to:
  - Primary and Secondary Heat Exchangers on L Pack & R Pack.

- Air enters through **RAM AIR** check valve.

- **When selected on**
  - Shuts off both packs.
  - TROV auto closes.
  - Check valve opens only when **RAM AIR** pressure exceeds cabin air pressure.
RAM AIR PRESSURE > CABIN AIR PRESSURE  
High To Low

- RAM AIR is used:
  - OVER PRESSURIZATION DUE TO LOSS OF SYSTEM CONTROL  
  - AIRCRAFT INTERIOR SMOKE REMOVAL  
  - Ditching
Equipment Cooling Sub-system

The ECS Packs provide airflow to equipment cooling fans for various sections of the aircraft that build up Heat.

Two-speed fans (35K relay)
Equipment Cooling Sub-system

LEER REER PDB
Cooling fans
Low speed

Personal Service Units (PSUs)
High speed

> 35,000'

< 35,000'

High speed

Low speed

Single ECS Pack

1. Maximum Altitude 48,000'
2. Bleed Air Manifold Set Point 35 Psi ± 3
3. Wing Anti-ice ON: 41,000' Maximum
Thank you!