G550 Pressurization System

Pressurized Baggage Compartment

Aft Secondary Bulkhead

Aft Primary Bulkhead

10.17 PSI

Pressurized Cabin

TROY
G550 Pressurization System

The pressurization system controls cabin pressure by modulating:

**Thrust Recovery Outflow Valve (TROV)**

Cabin air exiting vessel via:

**Thrust Recovery Outflow Valve (TROV)**

Optimum cabin pressure
G550 Pressurization System

Cool, conditioned, dehumidified air

Exhausted overboard via the TROV

Cabin air replaced with fresh air every two minutes
G550 Pressurization System

Three (3) Operational Modes

- Auto: AUTO SEMI
- Semi: SEMI SEMI
- Fault: MANUAL MANUAL

Two (2) Modes

- Flight: Flight Landing
- Landing: Landing Landing

Three (3) TROV Electrical Actuators (Motors)

Channel 1
- Auto 1/semi 1
- L'ess DC 28V DC E-inv
- 115V AC

Channel 2
- Auto 2/semi 2
- R main AC
- L'ess DC

Manual
PSI LIMITS

NORMAL

10.17 psi
6,000' Cabin

FL510

MAX 1
10.28 psi

Cabin Differential - 10.28

C

MAX 2
10.48 psi

Cabin Differential - 10.48

W

W
MAX 3

MAX 4

MAX 0.3 psi during Taxi, Takeoff and Landing so as to allow opening of Emergency Exit Doors (EED) and Main Entrance Door (MED)

6th and 7th windows
Cabin Pressure Controller (CPC)

- Brains of the system
- Microprocessor located in the REER that makes all logical decisions
- Receives input from:

  ![Diagram](image)

  - Two (2) channels in AUTO and SEMI
  - One channel active per leg and the other as watch dog
Cabin Pressure Controller (CPC)

- Channels change by:
  - Removing power
  - Cycling main or baggage door
  - Selecting/de-selecting manual mode

- Location
Cabin Pressure Acquisition Module (CPAM) (Arbitrator)

- Self-contained unit with a dedicated connection to: the aircraft static pressure lines, independent cabin pressure sensor.

- Located at the bottom of REER.

- Channels compare cabin pressure data with each other:

  4950' → 5300'

- If they differ by ≥ 310' they compare themselves with the CPAM:

  4950' → 5300'

- ≥ 310' than CPAM causes that channel to fail.

  4980'
AUTO MODE

- Fully automated

- Uses input from the Multifunction Control Display Unit (MCDU)

MODES ARE AUTOMATIC

- Requires AC Power

ADS 1
ADS 2
ADS 3

AUTO
SEMIAUTO
SEMI MODE

- Semi-Automatic

- Crew enters data in the Cabin Pressure Control Panel (CPCP)

- Flight modes are automatic

- Requires AC power

- QFE operations:
  high elevation airports
  airports not in database
  failure of AUTO

ADS 1
ADS 2
ADS 3
AUTO
SEMI
SEMI
CPCP
If channels 1 and 2 are inoperative, MANUAL mode is required.

Crew manually controls the outflow valve (TROV) in order to climb, maintain, and descend the cabin.

Crew uses the MAN HOLD knob.

Requires LESS DC power.

Cabin pressure acquisition module provides data.
**FLIGHT MODE**

**FLIGHT**

**LANDING**

**DURING TAXI OUT:**

1. FMS ground speed > 9 KTS, or
2. Power Lever Angle (PLA) ≥ 15°, or
3. Manually selected by the crew

Aircraft begins pressurizing to 500' below field elevation at 300 FPM (max 0.30 psi)

**CAUTION:** If returning to the ramp deselected in order to depressurize the cabin prior to opening the main door.
Landing Mode

During descent:

1. Crossing 1,000 feet below cruise altitude, the mode is entered automatically.

2. If the aircraft levels off for > 3 minutes above 25,000 feet, the mode resumes.

3. CPC uses data from descent rate to calculate.

4. Normally up to 300 FPM to 250' below landing field elevation in auto mode.
- Located on right side of fuselage
- Controlled by CPC in **AUTO/SEMI**
- Controlled by crew in **MANUAL**
- Shutter-type door that deflects cabin air aft “creating” thrust
- Three (3) Electrical Actuators (Motors)

**Power Sources**

- **Channel 1**
  - L ESS DC
  - 28VDC E-INV 115VAC
- **Channel 2**
  - R MAIN AC
- **Manual**
  - L ESS DC
THRUST RECOVERY OUTFLOW VALVE (TROV)

NORMAL

L IDG  APU GEN  R IDG

L MAIN AC  R MAIN AC

L ESS TRU  L ESS DC

28VDC  115VAC

E-INV

TROV MOTOR 1  TROV MOTOR 1
THrust recovery outflow valve (TROV)

L IDG

APU GEN

R IDG

EMERGENCY
THrust REcovery OUTFLOW VALVE (TROV)

L IDG

APU GEN

R IDG

HMG

L MAIN BATT

L ESS DC

EMERGENCY

TROV MANuAL

Emergency
ROTOR BURST/PRESSURIZATION

AFT SECONDARY BULKHEAD

AFT PRIMARY BULKHEAD

PRESSURIZED BAGGAGE COMPARTMENT

PRESSURIZED CABIN

AFT SECONDARY BULKHEAD

AFT PRIMARY BULKHEAD

TROV

10.17 PSI
In the event of catastrophic engine damage (Rotor-burst) affecting the baggage compartment, the aft secondary bulkhead, and the physical location of the TROV, ensures cabin pressurization is not affected.
PRESSURE RELIEF VALVE (PRV)

Located on right side of fuselage

1. **Positive Differential Pressure Relief:**
   
   1st Chamber opens at: 2nd Chamber opens at:

   ![Diagram with PSI values](image)

2. **Negative Differential Pressure Relief:**

3. **Ground Pressurization Limiting:**
   PRV opens fully 60 seconds > landing
PRESSURIZATION PROFILE

FL 510
10.17 psi

50,000 ft

6,000 ft

+500 fpm

-300 fpm

TAXI OUT
> 9 kts:

Flight

500' below Field Elev
@ 300 fpm

1,000 BELOW CRUISE

Landing

250' below Field Elev
@ 300 fpm

WEIGHT-ON-WHEELS (WOW)

TROV fully open/> 30 sec
PRV fully open/> 60 sec
EMERGENCY DESCENT MODE (EDM)

1. Autopilot ON
2. AT OR ABOVE 40,000' MSL
3. CABIN PRESSURE LOW CAS

1. MAN SPD 340 KCAS
2. ALTITUDE PRESELECT 15,000'
3. HDG 90° TURN TO THE LEFT
4. A/T ENGAGES, IF NOT ALREADY ENGAGED, AND RETARDS THRUST LEVERS TO IDLE
5. AIRPLANE DESCENDS TO 15,000' AT MHO/VMO
6. AT 15,000' SPEED CHANGES TO 250 KCAS

EDM CAN BE DISCONNECTED BY THE PILOT WITH THE A/P DISCONNECT BUTTON
# Cabin Pressure Low Trip Points

<table>
<thead>
<tr>
<th>Mode</th>
<th>Landing Field Elevation</th>
<th>Cabin Altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fault</td>
<td>N/A</td>
<td>8,000'</td>
</tr>
<tr>
<td>Manual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auto</td>
<td>&gt; 14,000'</td>
<td>≥ 15,500'</td>
</tr>
<tr>
<td>Semi</td>
<td>9,500' - 14,000'</td>
<td>≥ 14,500'</td>
</tr>
<tr>
<td>Semi</td>
<td>7,500' - 9,500'</td>
<td>≥ 10,000'</td>
</tr>
<tr>
<td></td>
<td>Sea Level - 7,500'</td>
<td>≥ 8,000'</td>
</tr>
</tbody>
</table>
Oxygen Requirements/Operations

Above 41,000' one pilot must be on oxygen - FAR 91

Crew and passenger masks not approved for use above 40,000' cabin altitude.

Above 35,000' one pilot must be on oxygen if the other pilot leaves the cockpit - FAR 91

Passenger masks will not provide sufficient oxygen above 34,000'.

Above FL250 crew masks must be in the quick donning position which allows donning within five (5) seconds.

Automatic deployment of passenger oxygen masks at 14,750' ± 250' (15,750' ± 250' with high alt).

See AFM 01-35-10 to determine required oxygen quantity for departure.
STATIC PORTS

Located on the right side of the fuselage

Feeds PRV 10.28 PSID Relief

Feeds PRV 10.48 PSID Relief

PRV
Questions, comments or errors?

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Thank you!