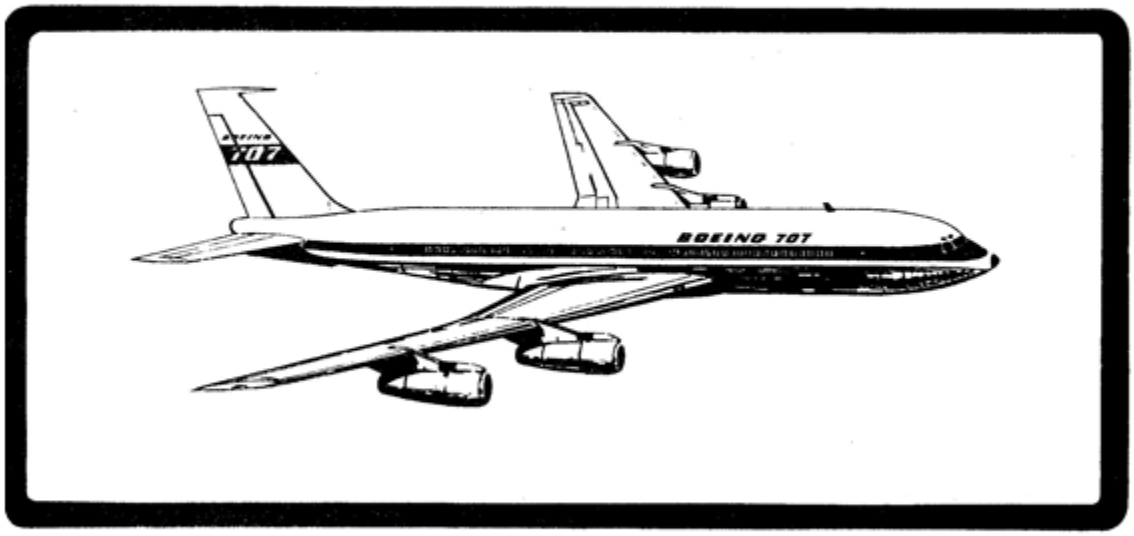
DO NOT USE FOR FLIGHT

707



FLIGHT MANUAL

PART II – Aircraft and Systems

DO NOT USE FOR FLIGHT

ABOUT THIS MANUAL

VERSION: 04 MARCH, 2011

WARNING: THIS MANUAL IS DESIGNED FOR MICROSOFT® FSX USE ONLY. DO NOT USE FOR FLIGHT.

The '707 Captain' FLIGHT MANUAL is organized into three Parts.
Each Part is provided as a separate Acrobat® PDF document:

Click START > Programs > Captain Sim > 707 Captain >

- **Part I – User's Manual**
- **Part II – Aircraft and Systems** - this document.
- **Part III – Normal Procedures**

Adobe Acrobat® Reader Required

FOR GENERAL INFORMATION ON THE '707 CAPTAIN' PRODUCT PLEASE USE WWW.CAPTAINSIM.COM .
THIS MANUAL PROVIDES ADDITIONAL INFORMATION ONLY, WHICH IS NOT AVAILABLE ON THE WEB SITE.

DO NOT USE FOR FLIGHT

707 CAPTAIN FLIGHT MANUAL

PART II –AIRCRAFT SYSTEMS

CONTENTS

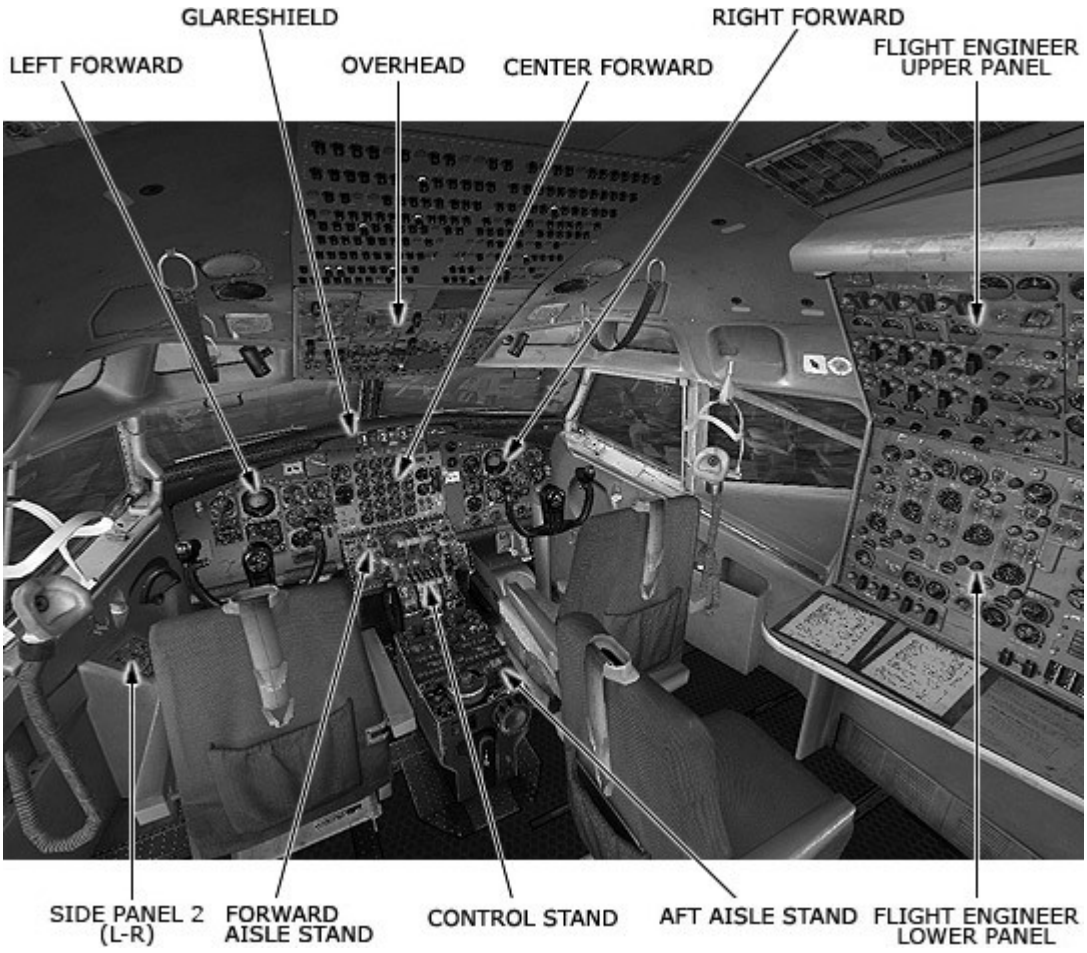
SYSTEMS DESCRIPTION

The '707 Captain' is one of the most advanced, complete and accurate airliner expansions for MSFS.

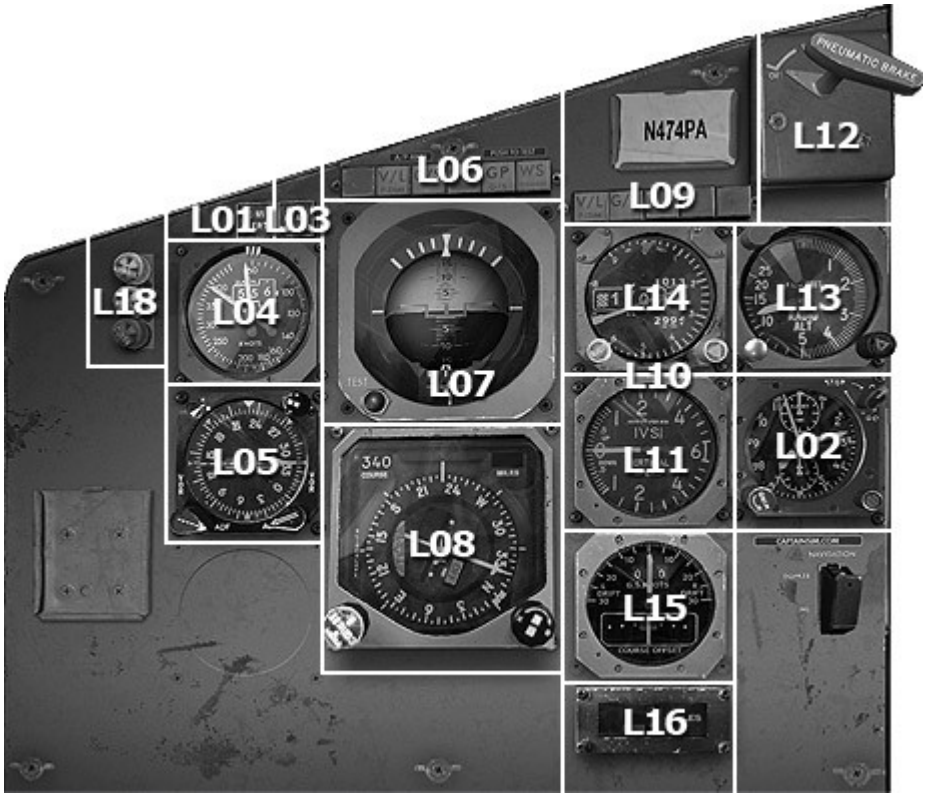
But the '707 Captain' (same as MSFS itself and any MSFS expansion) is a flight simulation software game. Therefore this product should not be used as flight training device (FTD) and/or simulator for flight training purposes.

All items should work as described in this manual. If something is not described as functional (therefore it does not work or does not exist in the model) it is not a system 'bug' but a reasonable simplification.

PANELS LAYOUT

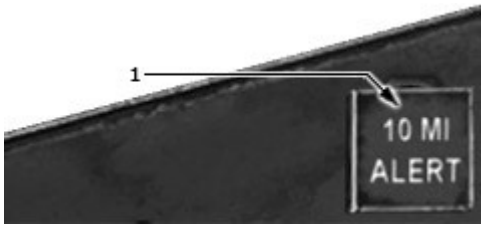


LEFT FORWARD PANEL



L01.10 MILE ALERT LIGHT
L02. CLOCKS
L03. AUTOPILOT DISENGAGED WARNING LIGHT
L04. AIRSPEED INDICATOR
L05. RADIO MAGNETIC INDICATOR (RMI)
L06. ANNUNCIATOR PANEL
L07. HORIZON FLIGHT DIRECTOR (HFD)
L08. MAGNETIC HEADING PICTORIAL DEVIATION INDICATOR (MHPDI)
L09. FLIGHT DIRECTOR ANNUNCIATOR LIGHTS
L11. IVSI (INSTANTANEOUS SPEED INDICATOR)
L12. PNEUMATIC BRAKE LEVER
L13. LOW RANGE RADIO ALTIMETER
L14. ELECTRIC ALTIMETER
L15. DOPPLER INDICATOR
L16. DME INDICATOR
L17. DOPPLER-INS SWITCH
L18. MARKER LIGHTS

L01. 10 MILE ALERT LIGHT



1. 10 Mile Alert Light

- Illuminates when less then 10 miles to go on one stage.
- Intermittently illuminates when stage transfer has not taken place and aircraft has completed stage (000 miles to go).

L02. CLOCKS

1. Elapsed Time Hours Minutes Hands

2,4. Hours And Minute Hands

3. Elapsed Time Switch

5. Winding & Setting Control

6. Lower Minute Register Hand

7. Sweep Second Hand

8. Push Button

1. Elapsed Time Hours Minutes Hands

Controlled by elapsed time switch.

3. Elapsed Time Switch

- Rotating switch clockwise to 0 resets elapsed time hands to 12 o'clock position.
- Rotating switch clockwise to GO starts elapsed time hands.
- Rotating switch clockwise to STOP stops elapsed time hands.

6. Lower Minute Register Hand

Controlled by push button.

8. Push Button

With sweep-second hand at the 12 o'clock position:
- Pushing button once starts the second hand, pushing a second time stops the hand, pushing a third time resets hand to 12 o'clock position.
- Minute register hand indicates elapsed time in minutes of sweep second hand.

L03. AUTOPILOT DISENGAGED WARNING LIGHT

1. A/P Disengagement Light

A red light marked AUTOPILOT DISENGAGED is on both the Captain's and the First Officer's panel. With the autopilot engaged, the lights will come on flashing any time either or both channels of the autopilot become disengaged for any reason.

L04. AIRSPEED INDICATOR

1. VMO Pointer
2. Airspeed Pointer
3. Movable External Reference Marker
4. Mach Number Indicator

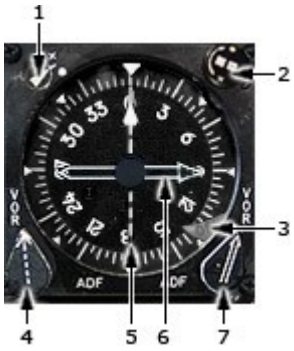
IAS

- Obtained from Pt and Ps.
- Solid pointer: IAS
- Barber pole: indicates maximum operating speed for existing pressure altitude.
- Three movable reference bugs

MACH (M)

- True mach readout from CADS. *(Calculated Air Data System)
- Black flag covers readout if below .40M.
- Red striped flag covers readout when power interrupted.

L05. RADIO MAGNETIC INDICATOR (RMI)



1. Synchronizing Annunciators

2. Synchronizing Knob

3. Compass Warning Flag

4,7. ADF/VOR Selector Knob

5,6. ADF/VOR Pointers

A radio magnetic indicator (RMI) is provided on each pilot's panel to furnish the radio and magnetic bearing information required for navigation.

The components of each RMI consist of an azimuth card, a lubber line, two ADF/VOR pointers (No. 1 and No. 2), two ADF/VOR switches (No. 1 and No. 2), a synchronizing knob, a synchronizing annunciator and a compass warning flag.

The compass card rotates in a manner such that the heading of the airplane will always be read under a fixed reference index (lubber line) at the top of the instrument. Also, fixed indices are provided at 45°, 90°, 135°, 180°, 225°, 270° and 315°.

The rotating compass card, or azimuth card, is graduated form 0 to 360 degrees clockwise in two degree increments.

The card is driven by a motor which receives signals from the directional gyro.

2. SYNC Knob

Rotates azimuth card for synchronization with flux valve.

3. Compass Warning Flag

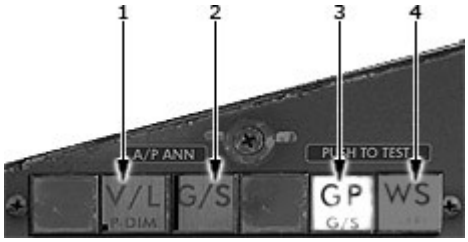
A compass warning flag on the lower right-hand corner of the RMI is marked OFF.
The warning flag will appear with loss of electrical power to the compass system.

5,6. ADF/VOR Pointers

Pointers indicate ADF and VOR bearing as selected by the ADF/VOR knobs at the bottom of the instrument.
A narrow pointer marked with a dashed line displays bearings from VOR No. 1 or ADF No. 1 as selected by the switch in the lower left corner of the instrument.

A wide pointer marked with two parallel solid lines displays bearings from VOR No. 2 (or ADF No. 2 if installed) as selected by the switch in the lower right corner.

L06. ANNUNCIATOR PANEL



1. VOR/LOC Annunciator
2. Glide Slope Annunciator
3. GPWS PULL UP / Push-To-Test LIGHT (Red)
4. Warning Lights

1. VOR/LOC Annunciator

P-DIM

- Press dims V/L, G/S and MDA lights.

AMBER

- System armed in VOR, LOC, GS AUTO or GS MAN modes prior to intercept of VOR radial or localizer beam.

GREEN

- Radial or localizer captured.
- Capture of localizer in GS MAN mode also forces capture of glide slope.

2. Glide Slope Annunciator

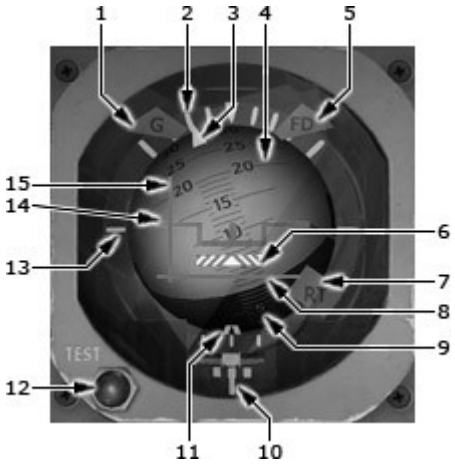
AMBER

- System armed in GS AUTO mode prior to intercept of glide slope.
- System armed in GS MAN mode prior to intercept of localizer beam.

GREEN

- Glide slope captured.

L07. HORIZON FLIGHT DIRECTOR (HFD)



1. Gyro (G) Warning Flag
2. Bank Angle Scale
3. Roll Index
4. Pitch Scale
5. Computer (FD) Warning Flag
6. Altimeter Bar
7. Rate of Turn (RT) Warning Flag
8. Pitch Command Bar
9. Attitude Sphere
10. Turn and Slip Indicator
11. Expanded Localizer
12. Test Button (Momentary)
13. Horizon Line
14. Fixed Symbolic Airplane.
15. Roll Command Bar

1. Gyro (G) Warning Flag

Appears if:
- Power loss to, or not developed in gyro.
- Power output of pitch or roll amplifiers is not proper.

2. Bank Angle Scale

Calibrations at 10, 20, 30, and 60 degrees in either direction.

3. Roll Index

Represents vertical plane of VG.

4. Pitch Scale

Calibrated in degrees 2, 4, etc., where 2 indicates 20 degrees pitch up or down.
As pitch increases, markings are longer to maintain horizon reference.

5. Computer (FD) Warning Flag

Appears if power is lost to:
- Flight director computer, or
- VG providing attitude information to flight director computer.

6. Altimeter Bar

- Driven by radio altimeter.
- Appears from behind expanded localizer scale at 200 ft on radio altimeter to display rate in closure with terrain or runway.
- Moves upward to touch bottom of fixed symbolic airplane at zero altitude.

7. Rate of Turn (RT) Warning Flag

- Appears when signal is not available to rate of turn needle.
- No transfer capability available.

8. Pitch Command Bar

Positioned by commands from selected flight director computer, pitch command set knob, or glideslope receiver.

9. Attitude Sphere

- Displays airplane attitude.
- Positioned by pitch or roll amplifiers with signals from vertical gyro.

10. Turn and Slip Indicator

Turn indicator is operated by signals from a rate gyro in the Lower 41.

11. Expanded Localizer

- Pip is positioned by localizer displacement error when tuned to ILS frequency.
- Limit marks on each side of scale represent ¼ dot displacement of PDI or MHPDI course deviation bar, which at runway threshold places the airplane within 50 ft of runway centerline.

12. Test Button (Momentary)

When pressed:

- Provides integrity check of attitude sphere, related amplifiers, and respective circuits.
- Attitude sphere should indicate 10 degrees pitch up and about a 20-degree right roll.

13. Horizon Line

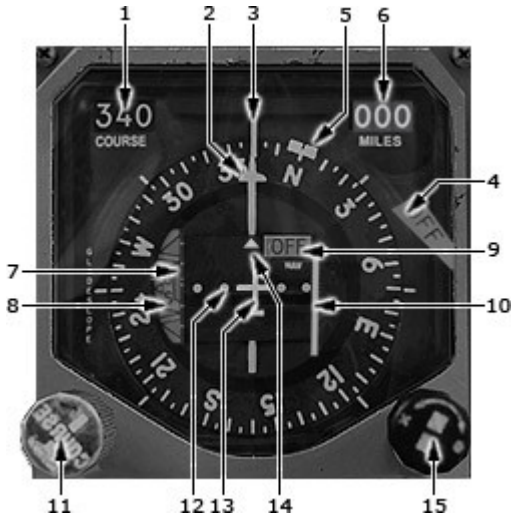
White line represents horizontal plane of VG and earth's horizon.

15. Roll Command Bar

Positioned by steering commands from flight director computer.

Note:
Flight director is connected with the autopilot.
Do not engage the autopilot if you need to use F/D only.

L08. MAGNETIC HEADING PICTORIAL DEVIATION INDICATOR (MHPDI)



1. Course Counter
2. Course Cursor
3. Azimuth Card and Lubber Line
4. MHPDI OFF Flag
5. Heading Cursor(Bug)
6. DME Indicator
7. Glide Slope Deviation Bar and
8. Glide Slope Warning Flag
9. Navigation Warning Flag
10. Course Deviation Bar
11. Course Selector
12. Course Deviation Scale
13. Fixed Airplane Reference
14. TO\FROM Indicator
15. Heading Selector

1. Course Counter

Indicates selected VOR/LOC course

2. Course Cursor

"T" Symbol
- Points to selected course
- Once set, moves with azimuth card

3. Azimuth Card and Lubber Line

Repeater from adjacent RMI, cards should always agree.

4. MHPDI OFF Flag

Indicates heading failure.
- Compass system power fails
- Backplane drive
- course selector out.

5. Heading Cursor (Bug)

Double Bar
- Provides heading reference for flight directors and autopilot (captain's)
- Once set, moves with azimuth card.

6. DME Indicator

Shows readout from respective NAV receiver (not transferable). When unusable, covered by a warning flag.

Note:
For user convenience in MSFS on Left Forward Panel shows DME1, on Right Forward Panel shows DME2.

7. Glide Slope Deviation Bar and Glideslope Scale

(green on some airplanes)
- Indicates glideslope deviation with ILS facility selected.
- Out of view with VOR frequency selected.
- Centers with loss of ILS signal.

Glideslope Scale 1 dot equals ¼ degree.

8. Glide Slope Warning Flag

Covers glideslope scale if glideslope signal is invalid.

9. Navigation Warning Flag

Indicates loss of VOR/LOC power or signal

10. Course Deviation Bar

Indicates course deviation.
Centers with loss of radio signal.

11. Course Selector

- Positions packplate.
- Sets course counter.
- Positions course cursor about inner edge of azimuth card.

1 dot equals ¼ degree

12. Course Deviation Scale

Reference for measuring displacement from selected course (course bar). One dot deviation of course bar represents approximately 1 dot equals 5 degrees in VOR, 1 ¼ degrees in LOC.

13. Symbolic Airplane

Fixed Airplane Reference

14. TO\FROM Indicator

To-From Arrow
Points toward a line through the VOR station perpendicular to selected course.

15. Heading Selector

Heading Selector
Positions heading cursor about azimuth card.

L09. FLIGHT DIRECTOR ANNUNCIATOR LIGHTS

1,2. The V/L and GS Lights

Located on each pilot's instrument panel on MHPDI airplanes. Each light can illuminate either amber or green.

V/L light with NAV AUTO selected:
–Amber when flight director computer is commanding capture of the selected course.
–Green when flight director computer senses that the desired course has been captured (within 2 LOC dots).

G/S light, with LOC frequency selected:
–Off prior to localizer capture.
–Amber when flight director computer captures localizer.
–Green when flight director computer senses that the glideslope has been captured (within ¼ GS dot).

1,2. The V/L and GS Lights

Indicate status of VOR/LOC and glideslope mode, when
OFF: neither mode is armed.
AMBER: respective mode is armed.
GREEN: respective mode is in a capture or tracking status.

L11. IVSI (INSTANTANEOUS SPEED INDICATOR)

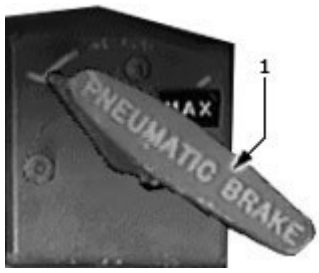
1. Vertical Speed Pointer

Two vertical speed indicators are used on the airplane, one located on the Captain's panel and the other on the First Officer's instrument panel.

Each indicator operates from the airplane static pressure system and provides instantaneous display of airplane vertical speed in the range of 0 to 6,000 feet per minute, up or down.

These instruments differ from a conventional vertical speed instrument by the addition of two accelerometers which generate pressure differences whenever there is a change in the normal acceleration of the airplane.

L12. PNEUMATIC BRAKE LEVER



1. Pneumatic Brake Lever

The lever has an OFF position and a range marked INCREASE.

In the OFF position, gas pressure is isolated from the transfer tube and the pneumatic brake line is vented to ambient pressure. When the lever is in the INCREASE range, metered pneumatic pressure, depending on the position of the pneumatic brake lever, reaches the transfer tube and applies all main gear brakes simultaneously.

L13. LOW RANGE RADIO ALTIMETER

1. Decision Height Light
3. Decision Height Bug
4. Pointer
5. Warning flag
6. Push-to-Test Button
7. Decision Height Set Knob
8. Pointer Mask

A low range radio altimeter is provided on each of the pilot's panels. The low range altimeter displays height above terrain with an altitude pointer moving over a circular scale. The range of the altimeter is from 0 feet to 2,500 feet.

1. Decision Height Light

Illuminates at and below decision height bug setting.

3. Decision Height Bug

This cursor can be moved about the periphery of the altimeter with the DH selector, thus selecting the altitude at which a decision height light will illuminate.

4. Pointer

Indicates height AGL

5. Warning flag

When the altimeter is operating properly, the flag is retracted.
Appears when:
- power is off
- radio signal is invalid
- radio altimeter is tested.

- test switch is actuated.

6. Push-to-Test Button

Operating the test switch will cause the altimeter to indicate 250 +-10 feet and the warning flag to appear.

7. Decision Height Set Knob

Positions bug to selected DH.

8. Pointer Mask

Covers pointer when above 2500 ft.

L14. ELECTRIC ALTIMETER

The pilot's altimeters are electrically operated. The Captain operates from the #1 air data computer and furnishes the air data computer with barometer corrections. These corrections are applied to the altitude signals sent from the air data computer to the altitude alerting system. The First Officer's altimeter operates from the air data sensor. This altimeter is the secondary altitude source for the ATC transponder.
On some aircraft, a servo /pneumatic altimeter on the Captain's panel is normally driven by the Air Data System and provides corrected altitude signals to the altitude alert system. The altimeter reverts to pneumatic operation in the event of power or air data failure. A pneumatic altimeter is provided on the F/O's panel which operates from the F/O's static system.

An altitude alerting system gives audible and visual indication of approaching an altitude (acquisition) or departing from an altitude (deviation). In the acquisition mode, an aural signal tone will sound momentarily and the alert lights will come on when passing through a point approximately 900 feet above or below the selected altitude. The light will remain on until approximately 300 feet from the selected altitude. In the deviation mode when departing the selected altitude the aural signal will sound momentarily and the alert lights will come on at approximately 300 feet above or below the selected altitude. The alert light will remain on until reset by pressing the alert light. A failure flag will appear in the alert indicator if a failure occurs in the Captain's altimeter or the alert indicator.

The altitude alerting system may be tested by turning the altitude selector toward the airplane altitude and then up through more than 900 feet above the airplane altitude. The aural signal sounds momentarily and the alert light illuminates when the indicator reads 300 feet from the airplane altitude and remains extinguished until 300 feet from the airplane altitude. When indicator altitude exceeds airplane altitude by 300 feet, the aural signal sounds momentarily and the alert lights illuminate.

1. Failure Warning Flag
2. Reference Altitude Bug
3. 100 Foot Pointer
4. Altitude Numerical Counter

5,6. Altimeter Setting Windows

7. Barometric Setting Control
8. Reference Altitude Bug Selector

1. Failure Warning Flag

In view indicating loss of signals, power or altitude error.

3. 100 Foot Pointer

Displays altitude in 100 foot increments. One full rotation of pointer equals 1000 feet.

4. Altitude Numerical Counter

Displays altitude in thousands and hundreds of feet.

5,6. Altimeter Setting Windows

Can be set in Millibars or inches/Hg.

7. Barometric Setting Control

Rotation of the control adjusts the barometric setting on the inches of mercury (in hg) indicator.

8. Reference Altitude Bug Selector

Turn clockwise for higher reference altitude.

DOPPLER NAVIGATION SYSTEM

The doppler system is a radar type navigation aid. The system measures frequency changes in reflected micro wave radiation (known as doppler effect) to provide:

- ground speed
- drift angle.

Aircraft heading is combined with ground speed and drift angle to compute miles-to-go along track to a selected check point.

- miles left or right of a selected track.

DOPPLER SENSOR

Each sensor has a transmitter/receiver, frequency tracker, indicator and control unit and shares an antenna assembly common to both systems. Each sensor functions to:

- determine and display ground speed and drift angle.
- provide ground speed and track information to its navigation computer.

Transmitter energy is beamed sequentially in four directions downwards by a switching assembly. The four element antenna array is common to doppler systems.

The receiver portion of the transmitter/receiver accepts the reflected energy from each beam and passes it to the tracker. The receivers of doppler system can be operated simultaneously and normally are.

Magnetic heading information from either compass system is fed through a compass selector switch to doppler system trackers. Each tracker:

- measures the average frequency shift from the return signals of the four beams and computes ground speed and drift angle, which is displayed on the indicator.
- computes actual magnetic track from magnetic heading and drift angle and transmits this and ground speed to the navigation computer.
- monitors return signals.

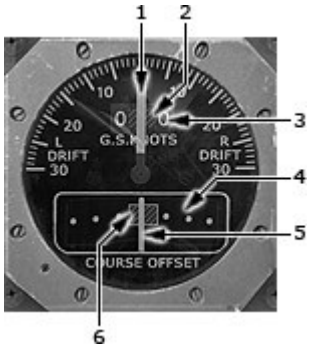
NAVIGATION COMPUTER

The navigation computer uses track and ground speed information from the tracker to compute the aircraft's progress relative to a geographic position. Progress is displayed as miles-to-go and miles left or right of track on the control panel. Two positions, labeled A and B may be selected. Shifting from one position to another can be done automatically when miles-to-go reaches zero or may be done manually at any time.

DNS may be selected to provide heading commands to the autopilot NAV mode. With the autopilot engaged in the NAV mode, the selected doppler track will be intercepted and maintained.

Doppler navigation procedures are to be followed on all route segments over land or water when doppler navigation is required.

L15. DOPPLER INDICATOR



1. Drift Angle
2. Indicator Flag
3. GS Knots Window
4. Course Offset Scale
5. Course Offset Pointer
6. Course Offset Flag

1. Drift Angle

Pointer gives difference between airplane's magnetic heading and magnetic track.

2. Indicator Flag

Flag appears when
- sensor system in memory operation and/or
- ground speed is less than 90 kt.

3. GS Knots Window

Displays ground speed in knots.

4. Course Offset Scale

One dot deviation equals 2 miles.

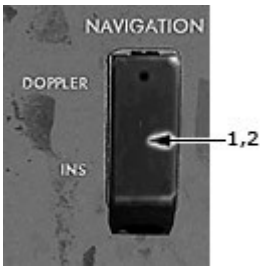
5. Course Offset Pointer

Indicates aircraft deviation from selected course.

6. Course Offset Flag

Appears when:
–Nav controller is OFF/STBY
–Nav Computer power fails.

L17. DOPPLER-INS SWITCH



1. Doppler-INS Switch

2. Doppler-INS Switch Cover

DOPPLER
- Autopilot in NAV mode tracks Doppler Navigation System
- Heading Bug on Captain's HSI controlled by HSI Heading Selector

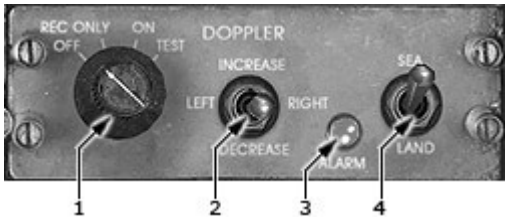
INS
Inop if Delco Carousel IV-A INS is not installed.
If installed:
- Autopilot in NAV mode tracks CIVA INS
- Heading Bug on Captain's HSI controlled by CIVA INS

If you have CIVA INS installed you should use CIVA INS panel.cfg file:
1. Backup (rename) original panel.cfg file in ...\SimObjects\Airplanes\CS_B707-300\panel\ folder.
2. Rename civa_panel.cfg file to panel.cfg file.

If you decide to uninstall CIVA INS you should restore original panel.cfg file.

For details on CIVA INS ops see its manual and video tutorial.

O08. DOPPLER CONTROL UNIT



1. Function Selector Switch

2. Slew Switch

3. Alarm Light

4. Sea/Land Switch

1. Function Selector Switch

Applies power and test signal to doppler system
OFF: System inoperative
REC ONLY: receiver inoperative, transmitter off.
ON: receiver and transmitter operative.
TEST: pulled-out position of switch in which transmitter inoperative. Introduces test signal which should give following indicator readouts:
- Drift angle of -20°±0.5°L
- Ground speeds of -608±3 (SEA) and -600±3 (LAND)

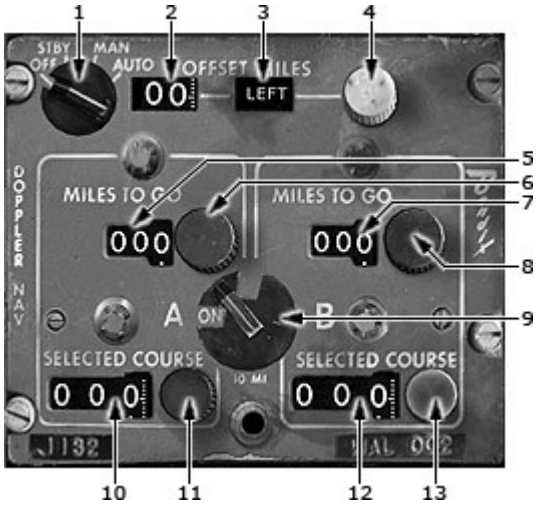
3. Alarm Light

Lights when signal output from receiver to tracker is below minimum acceptable strength or after mechanical or electrical failure of sensor (sensor is out). Groundspeed and drift angle are frozen at existing value.

4. Sea/Land Switch

Adjusts groundspeed computation for reflected signal differences over land and water. Adds 8 kt to computed groundspeed in SEA position.

P01. DOPPLER NAVIGATION CONTROLLER



1. NAV Controller

2,3. Offset Miles Indicators

4. Offset Miles Control

5,7. Miles To Go Indicator

6,8. Mileage Set Knobs

9. Stage Selector

10,12. Selected Course Indicator

11,13. Course Selector

1. NAV Controller

OFF – computer is off.
STBY – Computer is powered but not operating.
MAN – computer operates, indicating offset miles and miles-to-go but will not shift legs.
AUTO – Same as MAN but will shift between A and B when distance to go reaches zero.

2,3. Offset Miles Indicators

- Displays distance aircraft is offset from selected track on active stage.
- RIGHT 00 is the on course indication.

6,8. Mileage Set Knobs

(gradual adjustment speed)
- Use to set desired stage mileage.
- May be reset at any time without disrupting computer operation.

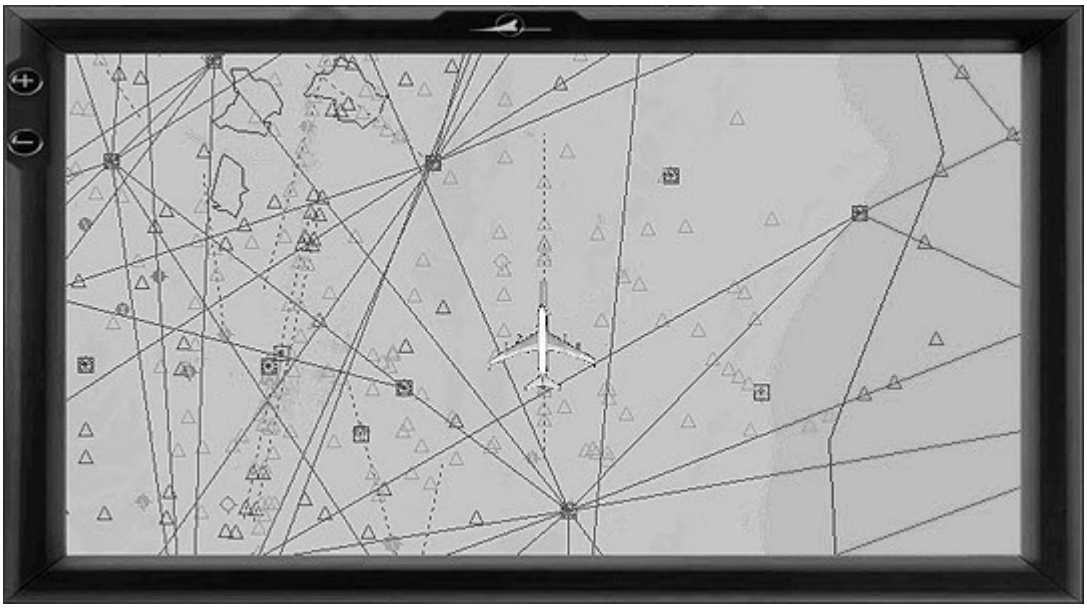
9. Stage Selector

Automatically or manually selects route stage for use.

11,13. Course Selector

(gradual adjustment speed)
Selects desired course. Selected course is compared with actual track and ground speed when in MAN or AUTO.

DIGITAL MAP



The digital map is not a part of the Doppler navigation system, but provided to facilitate operation of the Doppler Navigation System in FSX environment. The map simulates pictorial rendition of the old times paper nav maps route calculations and position updates realtime.

NORMAL OPERATION

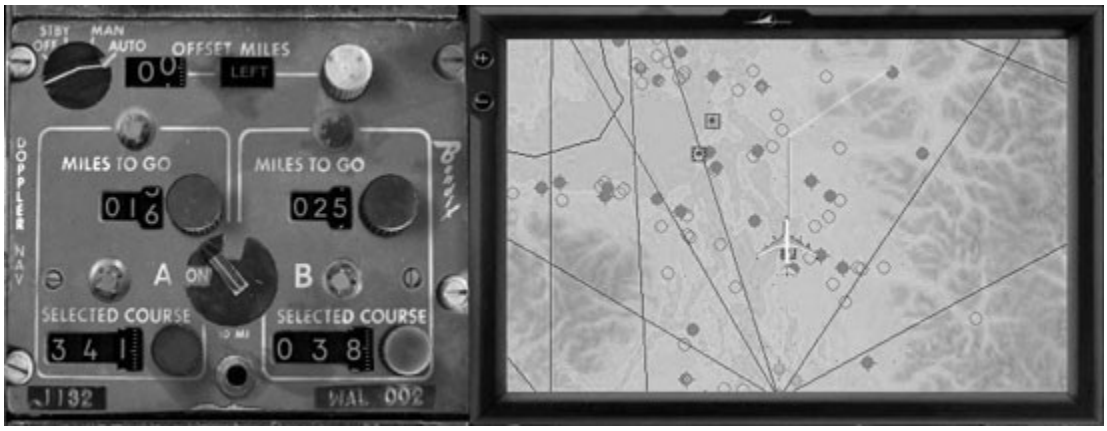
DOPPLER NAVIGATION SYSTEM Check

On DOPPLER CONTROL UNIT (O08) switch Function Selector to TEST position. It introduces test signal which should give following indicator readouts:
- Drift angle of -20°±0.5°L
- Ground speeds of -608±3 (SEA) and -600±3 (LAND)

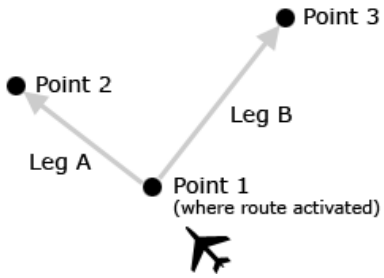
System setup
On DOPPLER CONTROL UNIT (O08)
1. Switch Function Selector to ON position.
2. Switch LAND/SEA switch: as required.
3. Make sure Alarm Light is out.

On DOPPLER NAVIGATION CONTROLLER (P01)
1. Set Nav Controller (1) to STBY.
2. Set Stage Selector (9) in the middle position.
3. Set distance and course for legs A and/or B using Mileage Set Knobs (6,8) and Course Selector (11,13)
4. Set Nav Controller to MAN or AUTO position.
5. To activate the route/leg set Stage Selector to A or B position. Route will be drawn on the digital map.

Note:
All legs are always calculated, drawn and initiated from the current aircraft position (point 1) at the moment when Stage Selector is turned from the middle to A or B position.



7. Drift Angle and Ground Speed will be shown on the Doppler Indicator.
8. Put Autopilot Mode Selector to NAV position - aircraft will follow the route.



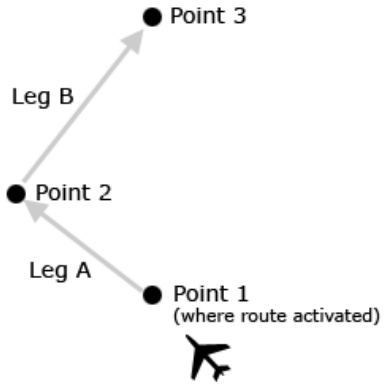
MAN Mode

MAN mode is for one-leg route operations only.

Either leg A or B can be selected first.

If leg A is selected, DNS will calculate the leg A as active going to point 2. Standby leg (B) can be corrected any at time. Stage Selector can be turned to B position at any moment to activate the leg B.

If leg B is selected, DNS will calculate the leg B as active going to point 3. Standby leg (A) can be corrected any at time. Stage Selector can be turned to A position at any moment to activate the leg A.



AUTO Mode

AUTO mode is for two and more legs route operations providing automatic activation of the next leg.
This is how the same route setup will work in AUTO mode.

If leg A is selected, DNS will calculate the leg A as acive going to point 2.
When the distance to go to the point 2 equals to aircraft turn radius to the leg B, Stage Selector automatically turns to B position activating the leg B.

Notes:

— Standby leg (B) can be corrected any at time before its automatic activation at the point 2.
— If Stage Selector is turned to middle position, current route remains active until position A or B are selected.

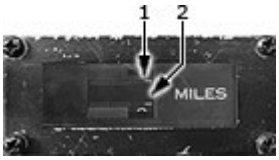
If your rout consists of more than two legs:
As soon as the first leg becomes inactive upon automatic activation of the next leg, you can setup the first leg to the next waypoint (point 4,5...).

Route Corrections

Only standby (inactive) leg can be corrected. Use corresponding controls (Course Selector and Mileage Set Knob) to correct the leg.

If you need to correct an active leg:
Set Stage Selector the middle position. Active leg will be permanently cleared.
Correct the leg usig corresponding controls (Course Selector and Mileage Set Knob).
Set Stage Selector A or B position to activate the leg.

L16. DME INDICATOR



1. DME Indicator
2. Inop Flag (Black)

Provides slant range in nautical miles to station tuned.

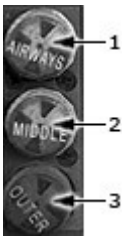
1. DME Indicator

For user convenience in MSFS on Left Forward Panel shows DME2, on Right Forward Panel shows DME1.

2. Inop Flag (Black)

Appears when power or locked signal not present.

L18. MARKER LIGHTS



1. Airways Light (Clear)
2. Middle Marker Light (Amber)
3. Outer Marker Light (Blue)

1. Airways Light (Clear)

Illuminates steady when over airways beacon or flashing when over airway fan marker beacon (3000 Hz signal)

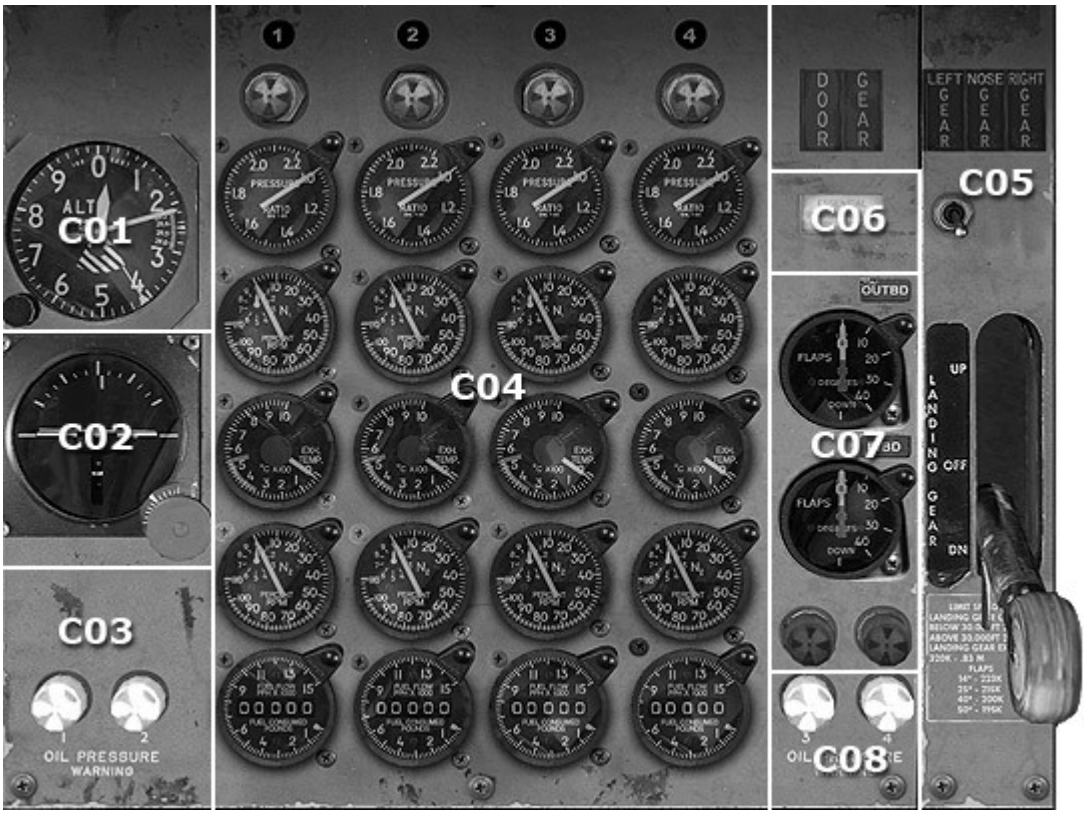
2. Middle Marker Light (Amber)

Illuminates flashing when over ILS middle marker beacon (1300 Hz signal)

3. Outer Marker Light (Blue)

Illuminates flashing when over ILS outer marker beacon (400 Hz signal)

CENTER FORWARD PANEL



C01. ALTIMETER
C02. ARTIFICIAL HORIZON
C03, C08. LOW OIL PRESSURE LIGHTS
C04. ENGINE INSTRUMENT PANEL
C05. LANDING GEAR CONTROL PANEL
C06. ESSENTIAL POWER FAILURE WARNING LIGHT
C07. FLAPS INDICATORS PANEL

C01. ALTIMETER

1. 1000-Feet Pointer
2. 100-Feet Pointer
3. Altitude Indicator
4. Barometric Setting Control
5. Kohlsman Window
6. Runway Height

The altimeter is a sensitive barometer that measures air pressure. It is calibrated to display that air pressure as height, usually in feet above mean sea level (MSL).

The altimeter is connected to the static ports. The air pressure inside the instrument case decreases as the airplane climbs and increases at its descends. As the pressure in the case drops, sealed wafers in the instrument case expand. Increasing pressure squeezes the wafers. As the wafers expand and contract, needles connected to them rotate around the altimeter dial like hands on a watch.

1. 1000-Feet Pointer

The short handle points to thousands of feel.

2. 100-Feet Pointer

The long needle shows hundreds of feet.

3. Altitude Indicator

A wedge-shaped striped indicator appears whenever the current altitude is less than 10000 feet (3048 meters).

For example, if the long needle is on 5 and the short needle is between the 2 and 3, you are at 2500 feet (762 meters) MSL. If the striped indicator is not visible, the same needle orientation shows that you are 12500 feet (3810) meters MSL.

4. Barometric Setting Control

To display altitude accurately, the altimeter must be set to the current barometric pressure adjusted to sea-level pressure.

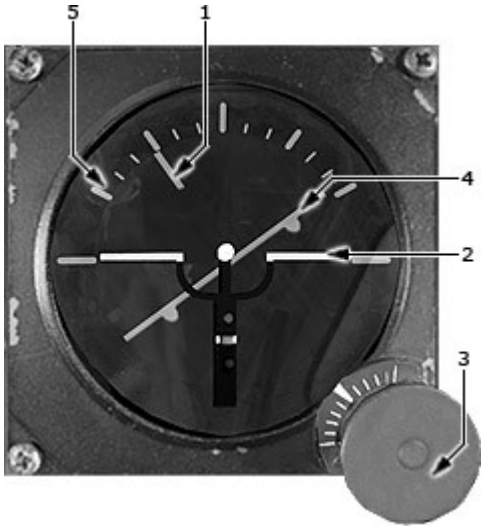
5. Kohlsman Window

This setting appears in the Kohlsman window - the scale between the 2 and 3 on the dial. Before takeoff, the pilot turns a setting knob to set the correct pressure. When properly set, the altimeter indicates the airport elevation – not zero – before the airplane takes off.

6. Runway Height

This pointer will indicate the runway elevation in feet above mean sea level (MSL) when pointers 1 and 2 are set to zero.

C02 ARTIFICIAL HORIZON



1. Bank Indicator
2. Symbolic Airplane
3. Pitch Trim and Gyro Caging Control
4. Horizon Bar
5. Bank Scale

The artificial horizon is powered by the vacuum system. Its horizon bar gives adive, climb and angle of bank indication.

1. Bank Indicator

Moves along a scale with marks of bank.

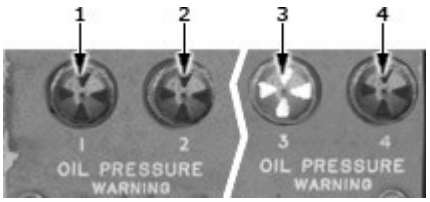
2. Symbolic Airplane

Shows the aircraft's pitch attitude in degrees above or below the horizon.

3. Pitch Trim and Gyro Caging Control

A knob at the bottom of the instrument dial permits adjustment of the instrument to any fore-and-aft attitude of the airplane within limits of plus or minus 7°.

C03, C08. LOW OIL PRESSURE LIGHTS



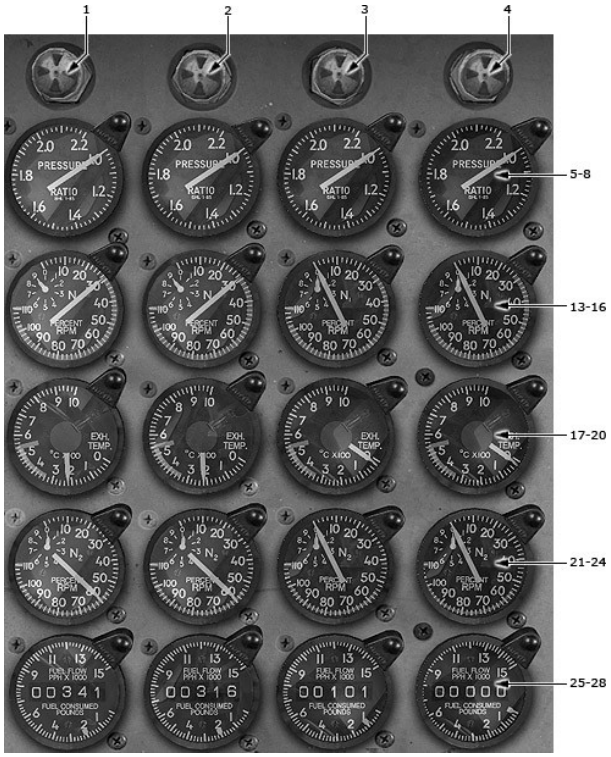
1-4. Low Oil Pressure Lights

4 amber generator drive low pressure lights are located on the Second Officer's panel.

Oil pressure, supplied by pumps in each drive.

–Come on when oil pressure is below 32 psi.
–Goes out when oil pressure is above 36 psi.

C04. ENGINE INSTRUMENT PANEL



1-4. Thrust Reverser Operating Lights

5-8. Engine Pressure Ratio Indicator Pointer

13-16. N1 Tachometers

17-20. Engine Exhaust Gas Temperature Indicators

21-24. N2 Tachometers

25-28. Engine Flowmeter Indicators

1-4. Thrust Reverser Operating Lights (Amber)

Comes on when either reverser on respective engine is not locked in the forward thrust position.

Engine Pressure Ratio Indicators

Indicates the ratio of exhaust gas pressure (Pt7) to inlet air pressure (Pt2). EPR=Pt7/Pt2 and is a parameter of the thrust developed by the engine.

The indicator is used as a primary thrust setting instrument since EPR is directly proportional to thrust.

13-16. N1 Tachometers

–Indicates low-pressure compressor rpm, larger dial shows 2% increments, smaller dial shows 1% increments.
–Powered by a tachometer generator which is driven by the N1 shaft.

GREEN BAND – Normal operating range.
RED RADIAL – Maximum operating RPM
VERNIER DIAL – Fine reading.

17-20. Engine Exhaust Gas Temperature Indicators

–Indicates turbine exhaust gas temperature in hundreds of degrees centigrade.
–EGT indicator system is self-powered.

GREEN BAND – Normal operating range.
YELLOW BAND – Approaching overtemperature.
RED RADIAL – Maximum temperature for takeoff/acceleration.

21-24. N2 Tachometers

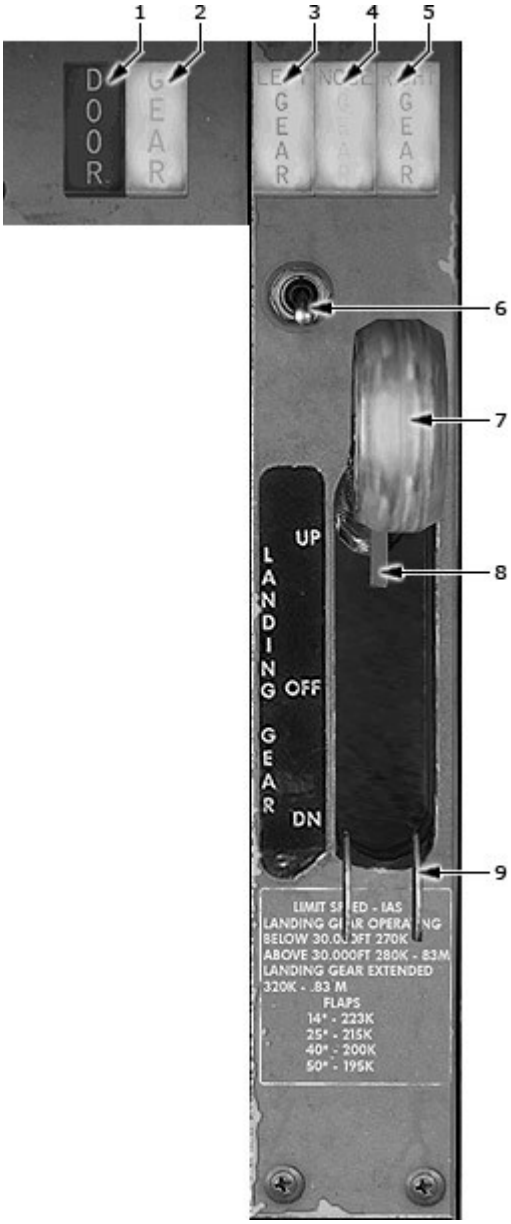
–Indicates high-pressure compressor rpm, larger dial shows 2% increments, smaller dial shows 1% increments.
–Powered by a tachometer generator which is driven by the engine accessory gear box.

GREEN BAND – Normal operating range.
RED RADIAL – Maximum operating RPM

25-28. Engine Flowmeter Indicators

–Bug shows fuel flow to respective engine in pounds per hour X 1000.
–Digital counter shows total pounds consumed.
–Requires ac power from the respective numbered bus for operation.

C05. LANDING GEAR CONTROL PANEL



1. Door Open Light
2. Gear Unsafe Light
3-5. Down and Locked Lights
6. Bright/Dim Switch
7. Gear Handle
8. Override Trigger
9. Lever Latch

1. Door Open Light

When this red light is on, a gear door is not closed.

2. Gear Unsafe Light

This red light comes on if any gear is:

- not locked,
- not up, with the handle up,
- not down, with the handle down,
- not down, with a throttle retarded. The light can be extinguished in this case by pulling the horn cutout lever.
- flaps at 40 or 50 position with gear up.

3-5. Down and Locked Lights

When its green light is on, the respective gear is down and locked.

Note

In addition, viewing ports permit visual confirmation of the gear position. Wheel well lights, controlled by a switch on the overhead panel, illuminate lock alignment marks on each gear.

7. Gear Handle

UP: Ports hydraulic pressure to the gear doors, gear up lines and auto braking.
OFF: Ports both the up and down lines to return. Gear locked mechanically.
DOWN: Ports hydraulic pressure to the gear doors, gear down lines and, with nose gear down, nose wheel steering.

8. Override Trigger

Pulling the trigger overrides the lever latch.

9. Lever Latch (On gear handle behind panel)

Prevents raising gear handle up if any of the following exists:

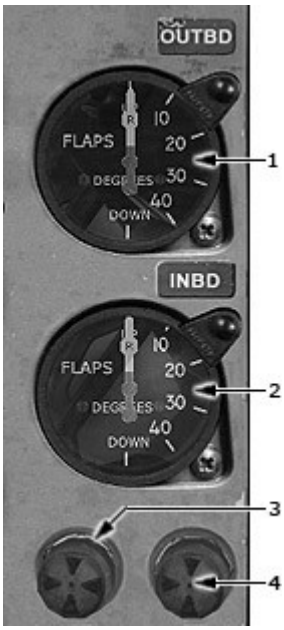
- Airplane is on the ground or oleo strut is not extended in flight.
- Main-gear trucks are not level.
- Nose wheels are not centered (some airplanes only)
- No electrical power to lever latch solenoid.

C06. ESSENTIAL POWER FAILURE WARNING LIGHT

1. Essential Power Failure Warning Light

(can be reset)
Flashing red – Loss of essential power (essential ac bus)
OFF – Essential power being supplied

C07. FLAPS INDICATORS PANEL



1.2. Flap Position Indicators

3.4. Leading Edge Flap Lights

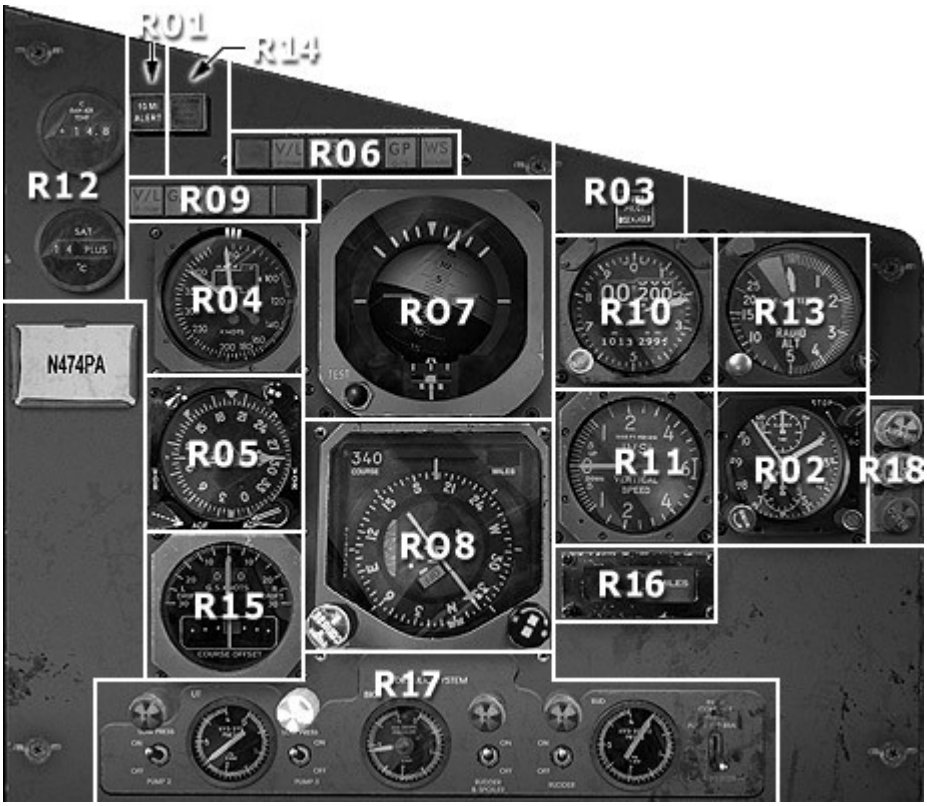
1,2. Flap Position Indicators

Two dual flap position indicators on the pilots' center panel are marked OUTBD and INBD respectively. Two needles in each indicator marked L and R indicate corresponding flap positions. White bands indicate maximum allowable needle deviation at each flap position.
Show position of trailing edge flaps

3,4. Leading Edge Flap Lights

ON: Indicate all respective edge flaps are extended
MAXIMUM SPEED – 223 KIAS.

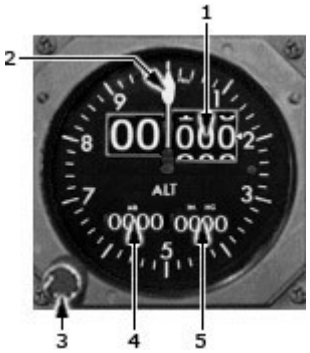
RIGHT FORWARD PANEL



R01. 10 MILE ALERT LIGHT
R02. CLOCKS
R03. AUTOPILOT DISENGAGED WARNING LIGHT
R04. AIRSPEED INDICATOR
R05. RADIO MAGNETIC INDICATOR (RMI)
R06. ANNUNCIATOR PANEL
R07. HORIZON FLIGHT DIRECTOR (HFD)
R08. MAGNETIC HEADING PICTORIAL DEVIATION INDICATOR (MHPDI)
R09. FLIGHT DIRECTOR ANNUNCIATOR LIGHTS
R10. STANDBY ALTIMETER
R11. IVSI (INSTANTANEOUS SPEED INDICATOR)
R12. TEMPERATURE INDICATORS
R13. LOW RANGE RADIO ALTIMETER
R14. RUDDER BOOST LOW PRESSURE LIGHT
R15. DOPPLER INDICATOR
R16. DME INDICATOR
R17. HYDRAULIC SYSTEM PANEL
R18. MARKER LIGHTS

R10. STANDBY ALTIMETER

An absolute-pressure measuring altimeter is provided as a standby altimeter.
The indicator has a range of -1,000 to 50,000 feet, indicated by a drum and pointer.



1. Digital Display
2. 100-Foot Pointer
3. Barometric Setting Control
4,5. Altimeter Setting Windows

1. Digital Display

Shows altitude in increments of 100 ft.

2. 100-Foot Pointer

Displays attitude in 100 foot Increment (smallest division equals 20 feet). One full rotation of pointer equals 1000 feet.

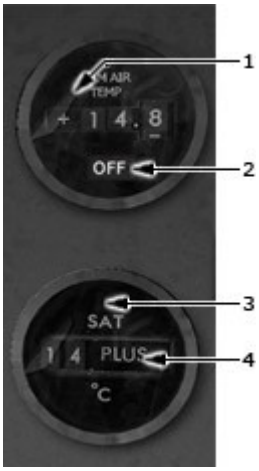
3. Barometric Setting Control

Rotation of the control adjusts the barometric setting on the inches of mercury (in HG) indicator.

4,5. Altimeter Setting Windows

Can be set in millibars or inches/Hg.

R12. TEMPERATURE INDICATORS



1. RAT Indicator
2 .OFF Flag
3. SAT Indicator
4. OFF Flag

1. RAT Indicator

Senses true RAT directly.

2. OFF Flag

Appears if power interrupted.

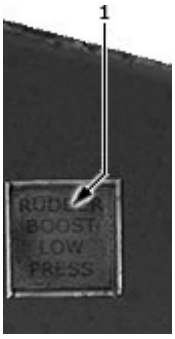
3. SAT Indicator

True SAT obtained from captain's CADS.

4. OFF Flag

Covers readout if power of CADS fails.

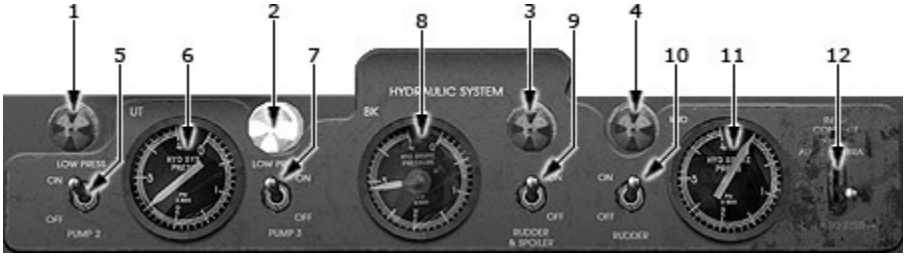
R14. RUDDER BOOST LOW PRESSURE LIGHT



1. Rudder Boost Low Pressure Light

Deactivated above 250 kt.
ON: below 250 kt, indicates insufficient rudder boost pressure.

R17. HYDRAULIC SYSTEM PANEL



1,2. Engine Pumps Low Pressure Lights
3,4. AC Auxiliary Pump Low Pressure Lights
5,7. Engine Pump Switches
6. Utility Hydraulic System Pressure
8. Hydraulic Brake Pressure Gage
9,10. AC Auxiliary Pump Switches
11. Rudder Hydraulic Pressure Gage
12. Interconnect Valve Switch

1,2. Engine Pumps Low Pressure Lights

OUT: Pressure normal.
ON: Pressure below limits.
–Light is deactivated when respective fire handle is pulled.
–Powered from HYD PRESS & DOOR WARN LT CB on P5, TR bus No. 3.

3,4. AC Auxiliary Pump Low Pressure Lights

OUT: Pressure normal.
ON: Pressure below limits.
Each light is powered from the other aux pump control CB.

5,7. Engine Pump Switches

When positioned to
ON: Allows pump to develop pressure.
OFF: Shuts off pump's output, but pump still rotates. If electric power fails, pump is reactivated.
Both switches are powered from a PUMP VALVES CB on P5, TR bus No. 2.

6. Utility Hydraulic System Pressure

Displays hydraulic system pressure. Powered from HYD PRESS CB on P7.

8. Hydraulic Brake Pressure Gage

This indicator indicates pressure on the air side of the brake accumulator. The indicator will display precharge pressure when the brake hydraulic system is depressurized and will display zero, if the precharge pressure is lost.

When the brake system hydraulic pressure exceeds precharge pressure, the indicator will display brake system hydraulic pressure.

9,10. AC Auxiliary Pump Switches

When positioned to
ON: Activates pump motor.
OFF: Shuts off pump motor.

Switch No.1 is powered from an AUX PUMP CONT No. 1 CB on P5, TR bus No. 4, the No.2 switch from an AUX HYD PUMP CONT-2 CB on P5, TR bus No.3.

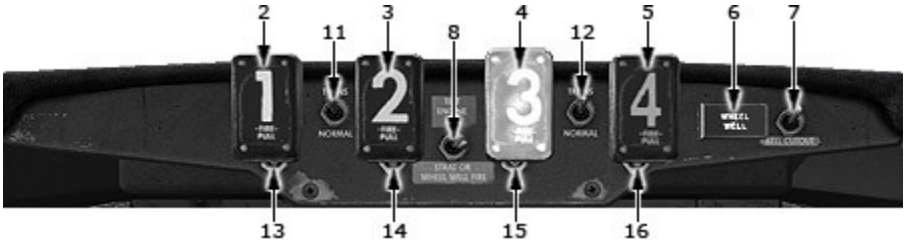
11. Rudder Hydraulic Pressure Gage

–Displays rudder hydraulic fluid pressure.
–If airspeed is below 250 kt, indication also represents auxiliary hydraulic pressure.
–Powered from a RUDDER BOOST & AIR BOTTLE on CB on P7.

12. Interconnect Valve Switch

When positioned to
AUX 1 & 2 BRAKE: No.1 and No.2 auxiliary pumps can pressurize the brake system.
OFF: Auxiliary system is isolated from utility system.
AUX 1 TO SYSTEM: No.1 auxiliary pump can pressurize utility system and utility system can pressurize entire auxiliary system.

GLARESHIELD PANEL



2,3,4,5. Engine Fire Handles
6. Main Wheel Well Warning Light
7. Fire Alarm Bell Cutout Switch
8. Fire Test Switch
11,12. Bottle Transfer (Selector) Switch
13-16. Bottle Discharge Buttons

2,3,4,5. Engine Fire Handles

Illuminates when a temperature rise is sensed in its engine or strut or handle.

When pulled:
- arms discharge button
- closes respective engine's nacelle anti-ice valves, low pressure bleed, fuel shutoff valve, hydraulic-pump supply valve (inboards only)
- deactivates respective engine's fuel shutoff valve switch and hydraulic-pump low pressure lights (inboards only)
- trips respective generator's GCR and GB.

Used to prevent:
- smoke contamination of pneumatic manifold, and
- loss of pneumatic manifold air into inoperative engine if check valve fails.

With the engine fire handle pulled out, and the bottle discharge switch depressed, the actual fire extinguishing process will commence.

7. Fire Alarm Bell Cutout Switch

Will silence the bell and horn The lights will remain illuminated as long as the fire condition exists.

8. Fire Test Switch

The switch has a single test position that checks all loops and warnings. When positioned to TEST, if normal:
- fire warning bells sounds,
- all fire handle warning lights come on

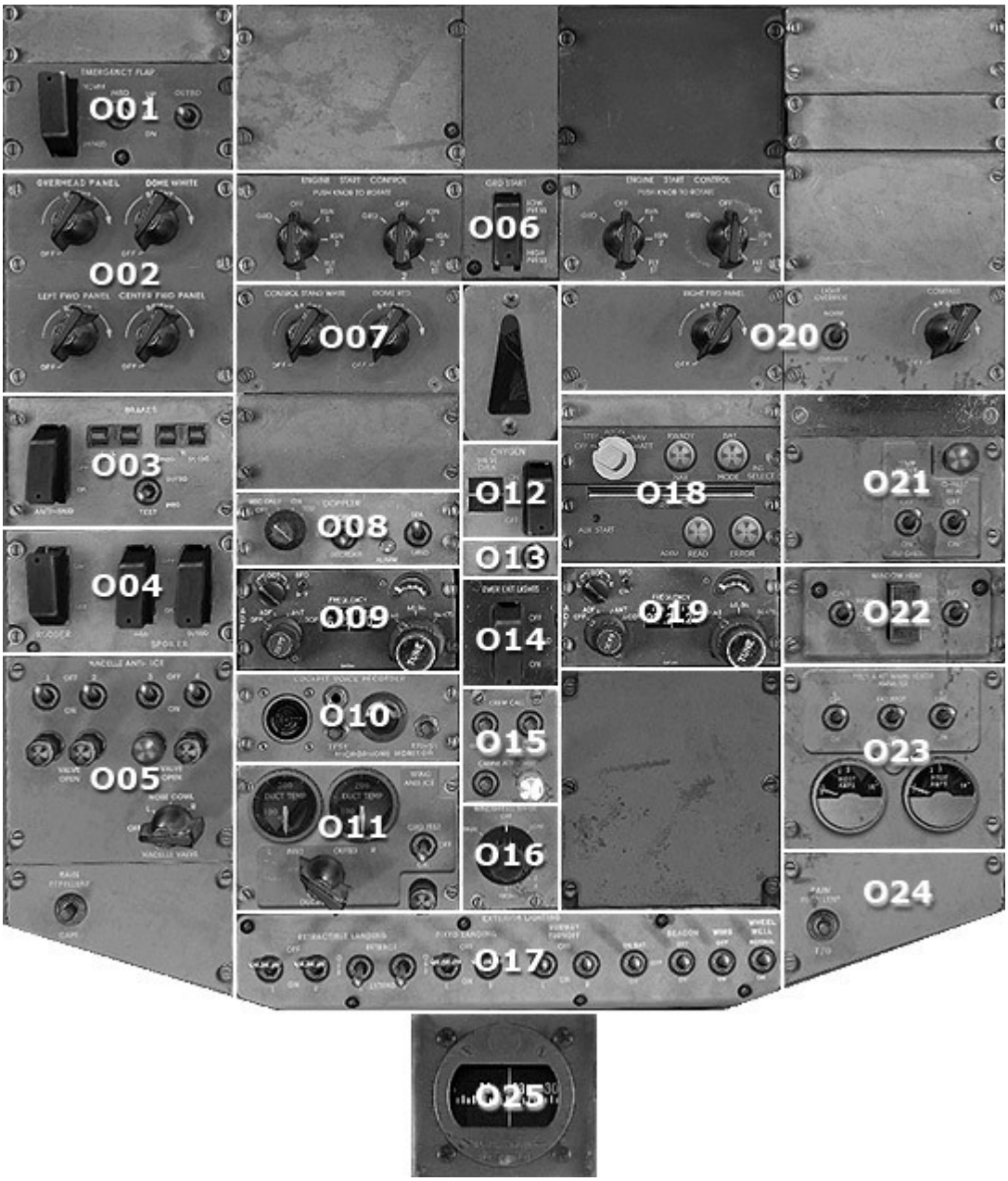
11,12. Bottle Transfer (Selector) Switch

When positioned to:
NORM: Arms fire bottle of respective numbered engine to discharge.
TRANS: Arms the other fire bottle in respective wing to discharge.

13-16. Bottle Discharge Buttons

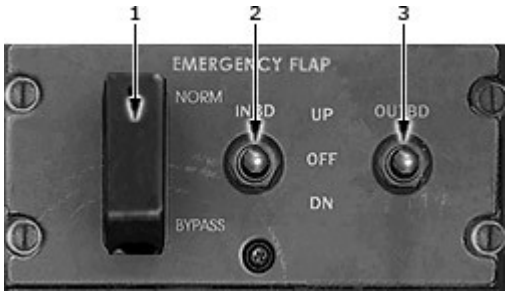
A push button type bottle discharge switch is located under each engine fire handle.
When armed by respective fire handle and pressed:
- opens that engine's selector valve;
- discharges a fire bottle

OVERHEAD PANEL



O01. EMERGENCY FLAP SWITCHES
O02. LIGHTS CONTROLS
O03. ANTI-SKID CONTROL PANEL
O04. HYDRAULIC POWER SYSTEM
O05. ANTI-ICE CONTROLS
O06. ENGINE START CONTROL PANEL
O07. LIGHTS CONTROL PANEL
O08. DOPPLER CONTROL UNIT *(See page 22 for details)*
O09, O19. ADF CONTROL PANEL
O10. COCKPIT VOICE RECORDER UNIT
O11. ANTI-ICE PANEL
O12. OXYGEN PRESSURE PANEL
O13. SEAT BELTS SWITCH
O14. COCKPIT EMERGENCY EXIT LIGHTS SWITCH
O15. CABIN CALL PANEL
O16. WINDSHIELD WIPERS SWITCH
O17. EXTERIOR LIGHTING PANEL
O18. CIVA-INS CONTROL PANEL
O20. LIGHTS CONTROLS
O21. PROBE HEAT PANEL
022. WINDOW HEAT PANEL
O23. PITOT STATIC HEAT PANEL
O24. RAIN REPELLENT CONTROL BUTTON
O25. STANDBY MAGNETIC COMPASS

O01. EMERGENCY FLAP SWITCHES



1. NORM-Bypass Switch

2,3. INBD and OUTBD Switches

1. NORM-Bypass Switch

NORM: Disarms electric operation of trailing edge flaps and permits hydraulic operation.
BYPASS: Bypasses hydraulic trailing edge flap system and arms adjacent INBD, OUTBD switches.

2,3. Emergency Flap Directional Control Switches

These two switches on the overhead panel are adjacent to the alternate flaps master switch. The switches, marked INBD and OUTBD, have UP-OFF-DN positions and are spring-loaded from the DN position to the OFF position.

When either alternate flap switch is in the DN position, the corresponding trailing edge flaps extend electrically and the leading edge flaps standby drive shutoff valve will open causing all leading edge flaps and slats to extend.

When the alternate flap switches move from the DN position to the OFF position, the leading edge flaps and slats will continue to extend, or remain extended, as long as the alternate flaps master switch is in the ON position. The trailing edge flaps will stop.

When the alternate flap switches are in the UP position, with the leading edge flaps and slats extended and the alternate flaps master switch in the ON position, the leading edge flaps and slats will remain extended and the corresponding trailing edge flaps will retract. The leading edge flaps and slats cannot be retracted using the alternate flap system.

O02. LIGHTS CONTROLS

1. Overhead Panel Lights
2. Dome White
3. Left FWD Panel Lights
4. Center FWD Panel Lights

1. Overhead Panel Lights

Control integral instrument Illumination on overhead panel.

2. Dome White

Controls two dome lights in cockpit above the pilot's section.

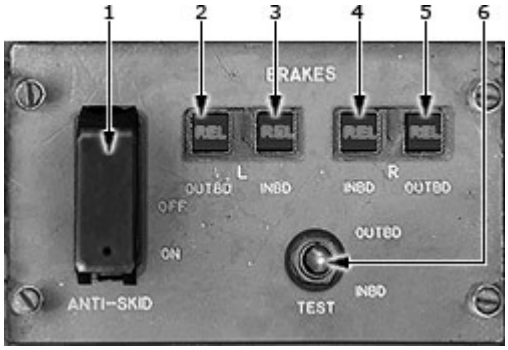
3. Left FWD Panel Lights

Control integral instrument illumination on center panel.

4. Center FWD Panel Lights

Control integral instrument illumination on center panel.

O03. ANTI-SKID CONTROL PANEL



1. Anti-Skid Switch

2-5. Brake Released Indicator

6. Anti-Skid Test Switch

1. Anti-Skid Switch

ON: System energized.
OFF: System deenergized.

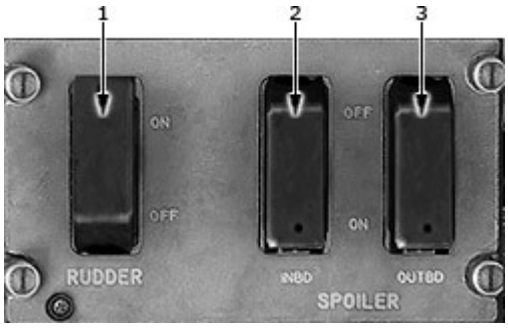
2-5. Brake Released Indicator

REL: Antiskid valve is porting part of all brake pressure to return. In flight with gear down, constant release signal is commanded to prevent locked wheel landing.
BLANK: Antiskid valves deenergized. Blanks also show when system is off.

6. Anti-Skid Test Switch

When the system is on, the gear is down, and when the test switch is actuated:
- The indicators on the selected position (OUTBD or INBD) show BLANK.
- The indicators of the other position show REL.

O04. HYDRAULIC POWER SYSTEM



1. Rudder Switch

2. Outboard Spoiler Switch

3. Inboard Spoiler Switch

1. Rudder Switch

ON: Opens rudder boost shutoff valve.
OFF: Shuts off rudder boost pressure and series yaw damper.

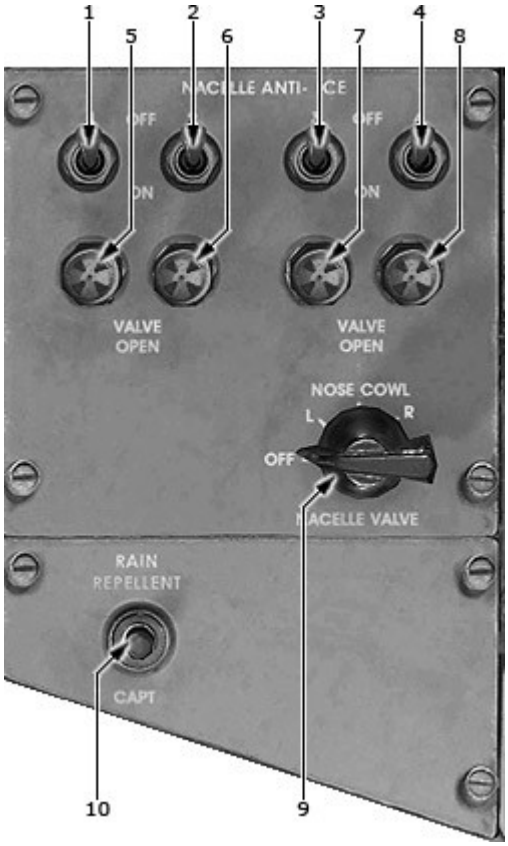
2. Outboard Spoiler Switch

OFF – Shuts off utility system pressure to outboard spoilers causing nose-down pitch with speedbrake lever aft.

3. Inboard Spoiler Switch

OFF – Shuts off auxiliary system pressure to inboard spoilers causing nose-up pitch with speedbrake lever aft.

O05. ANTI-ICE CONTROLS



1-4. Nacelle Anti-Ice Switches

5-8. Valve Open Lights

9. Nacelle Valve Selector

10. Rain Repellent Control Button

1-4. Nacelle Anti-Ice Switches

Each controls its respective engine's LH, RH and noze-cowl valve.
ON:
-Open all three valves
-Provides power to VALVE OPEN light
OFF:
-Closes all three valves
-Removes power from the VALVE OPEN light

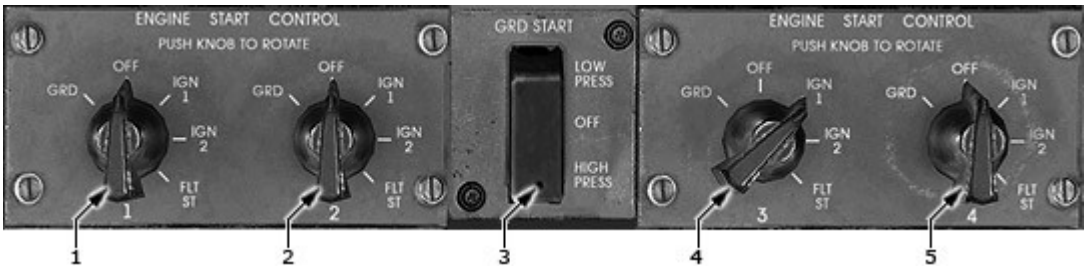
5-8. Valve Open Lights

ON:
Selected anti-ice valve is open.
OFF:
-Selected anti-ice valve is not fully open
-The NACELLE VALVE selector is OFF
-The NACELLE ANTI-ICE switch is OFF

9. Nacelle Valve Selector

Controls the four VALVE OPEN lights.
With the selector positioned.
OFF: all lights out.
L: Each light monitors its left-hand anti-ice valve.
NOSE COWL: Each light monitors its nose cowl anti-ice valve.
R: Each light monitors its right-hand anti-ice valve.

O06. ENGINE START CONTROL PANEL



1,2,4,5. Engine Start Control Switch

GROUND START:
–Arms start-lever switch to provide ignition through both exciters.
–Opens the low-pressure start air valve.

Note

If the No. 3 engine is being used for a high pressure start, the No. 3 ENGINE START CONTROL switch opens the high-pressure start air valve.

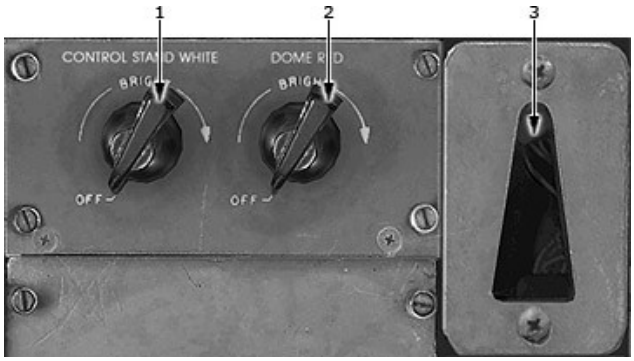
FLIGHT START (always armed):
Energizes both exciters directly to provide continuous ignition. It is used:
–during takeoff
–for immediate relight in the event of a flameout ,
–for windmill starting in flight,
–before applying nacelle anti-ice,
–during turbulence,
–during landing.

The IGN 1 and IGN 2 selections provide for single continuous ignition.

3. Ground Start Selector Switch

LOW PRESS:
–Arms all four ENGINE START CONTROL switches for control of the low pressure start air valve.
–Places turbocompressors in ground mode to increase output for crossfeed starting.
HIGH PRESS:
Arms No.3 ENGINE START CONTROL switch for control of the high pressure start air valve.

O07. LIGHTS CONTROL PANEL



1. Control Stand White Light
2. Dome Red
3. Flood Light

1. Control Stand White Light

Controls white light located in overhead panel.

2. Dome Red

Three red dome lights provide general diffused illumination of the control cabin.
Two lights are installed on the left and right supports of the overhead panel, and the other in the center of the aft control cabin area.

O09,O19.ADF CONTROL PANEL

1. Loop Control
2. Beat Frequency Oscillator (BFO) Switch
3. Frequency Indicator
4. Tuning Meter
5. Volume Control
6. Volume Control Function Selector
7. Frequency Band Selector
8. Frequency Band Selector Tuning Control

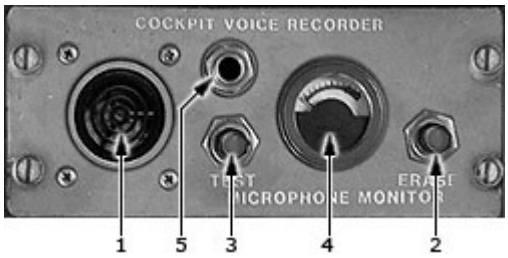
4. Tuning Meter

Displays relative strength of signal being received. Most desirable reception is achieved by tuning for maximum needle deflection.

6. Function Selector

ADF
- Both the sense and loop antennas operate; bearing information is displayed on the RMI's.

O10. COCKPIT VOICE RECORDER UNIT



1. Voice Recorder Area Microphone
2. Voice Recorder Erase Button
3. Voice Recorder Test Button
4. Test Meter
5. Headset Jack

2. Voice Recorder Erase Button

Push in for 2 seconds. If airplane is on the ground and parking brake is set:
- Entire tape is erased in 10 seconds, and
- 400-Hz eraze tone is activated during erasure.

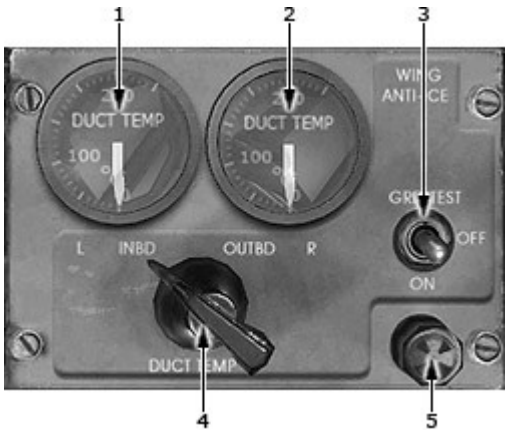
3. Voice Recorder Test Button

Push in for 5 seconds:
- Activates test and
- 600 Hz test tone.

4. Test Meter

During test, if needle reads:
- Steadily in green for 5 seconds, all channels recording OK.

O11. ANTI-ICE PANEL



1,2. Duct Temperature Gage

3. Wing Anti-Ice Switch

4. Anti-Ice Duct Temperature Selector

5. Overheat Light

1,2. Duct Temperature Gages

Indicate either both inboard or both outboard duct temperatures as selected.

3. Wing Anti-Ice Switch

Controls all wing anti-ice shutoff valves.
GRD TEST (spring loaded to OFF)
- activated in ground mode,
- opens all shutoff valves,
- deactivated in flight mode.

OFF
- closes all shutoff valves

ON
- activated in flight mode.

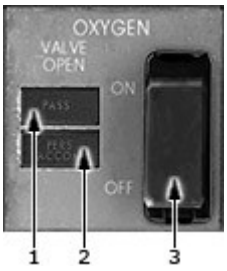
4. Duct Temperature Selector

Selects inboard or outboard for temperature indication.

5. Overheat Light (Amber)

- activated only in ground mode,

O12. OXYGEN PRESSURE PANEL



1. Passenger Oxygen Light
2. Pers Accom Light
3. Passenger Oxygen Switch

1. Passenger Oxygen Pressure Indicating Light (Amber)

ON – amber PASS illuminates when system pressurized.

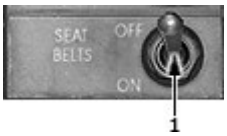
2. Personnel Accomodations Oxygen Pressure Indicating Light (Amber)

ON – amber PERS ACCOM illuminates when system pressurized.

3. Passenger Oxygen Switch

ON: opens manual trigger valve and actuates personnel accommodation system.
NORM: guarded position, sets system in automatic mode. Both systems pressurized automatically when cabin altitude reaches 14,000 ft.

O13. SEAT BELTS SWITCH



1. Seat Belts Switch

A switch marked SEAT BELTS with ON-OFF positions.
With this switch in the ON position a chord chime will sound .

O14. COCKPIT EMERGENCY EXIT LIGHTS SWITCH

1. Cockpit Emergency Lights Switch

OFF: Light will not illuminate. Closing the guard will move switch to the ARMED position if it is in the OFF position.

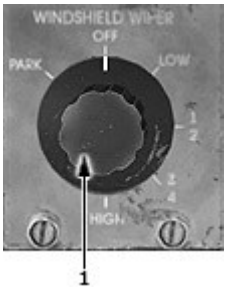
O15. CABIN CALL PANEL

1. Ground Crew Call Switch
2. Pers Accom Switch
3. Cabin Attendant Call Switch
4. Cabin Attendant Call Light (blue).

4. Cabin Attendant Call Light (blue)

Illuminates while captain call switch is pressed at either attendant's panel.

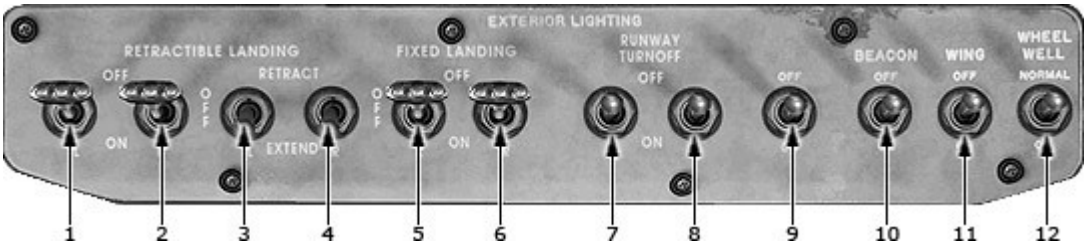
O16. WINDSHIELD WIPERS SWITCH



1. Windshield Wipers Switch

Each pilot's No. 1 window is provided with an 28V DC (DC2 for LI; DC1 for RI) electric 4-speed windshield wiper. The two wipers are separate independent systems with a single 6-position (PARK-OFF-LOW-1/2-3/4-HIGH) control switch located on the pilot's overhead panel. The PARK position stows the wipers at the bottom of the windshield, and is spring-loaded to the OFF position. The LOW through HIGH positions select the speed of the wipers.

O17. EXTERIOR LIGHTING PANEL



1-4. Landing Lights Switch

— 1,2. Retractable Landing Light Switch
ON - Retractable landing lights illuminate.
— 3,4. Retract-Extend Switch
Retract - - Retracts outboard landing lights.
Extend – extends outboard landing lights.

5,6. Taxi Light Switch

A taxi light is mounted on the nose wheel strut.

Fixed Landing Lights Switch

ON – Fixed landing lights illuminate.

7,8. Runway Turnoff Lights Switch

A RUNWAY TURNOFF light is adjacent to and inboard of, the inboard fixed landing light.

The lights provide ground roll illumination and are controlled by two switches.

Note

Do not illuminate LANDING and/or RUNWAY TURNOFF lights for more than 5 minutes while stationary on the ground. Allow a 5 minute cooling period before re-illuminating.

ON — Runway turnoff lights illuminate.

9. Navigation Lights Switch

White tip mounted tail lights are installed on the trailing edges of the wing tips to provide a horizontal white beam aft. Navigation lights, red left and green right, are provided in the outboard edge of each wing.

10. Beacon (Anti-Collision) Lights Switch

The beacon lights on the top and bottom of the fuselage, provide high intensity red flashes, as a proximity warning of the aircraft.

ON – Beacon (anti-collision) lights illuminate.

11. Wing Illumination Lights Switch

Two wing illumination lights are mounted flush with the fuselage and forward of the wing leading edge.

ON — illuminates the tops and leading edges of the wings and engine nacelle areas.

O18. CIVA-INS CONTROL PANEL

1. Mode Selector Knob

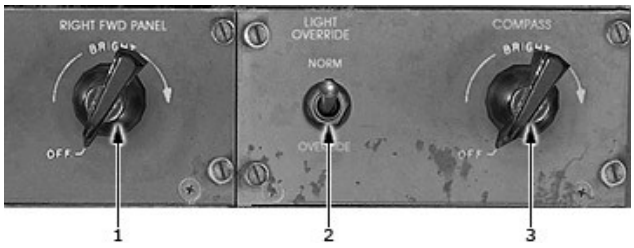
2. READY NAV Light (GREEN)

3. BAT Light (RED)

4-6. INS Automatic Data Entry Unit Gauge

Inop if Delco Carousel IV-A INS is not installed.
For details see Delco Carousel IV-A INS Manual.

O20. LIGHTS CONTROLS



1. Right Fwd Panel Lights
2. Light Override Switch
3. Compass Light

1. Right Fwd Panel Lights

Control integral instrument illumination on the right forward panel.

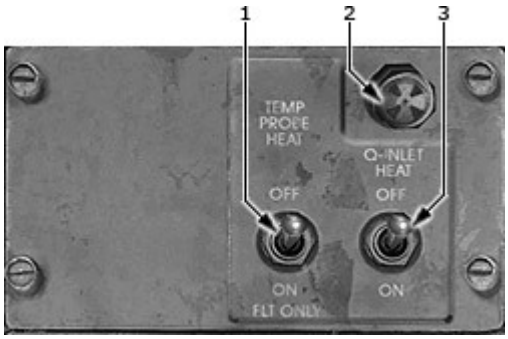
2. Light Override Switch

OVERRIDE – Turns the lights located under the Pilot's light shield and Engineer's panel fluorescent flood lights to full intensity

3. Compass Light

Illuminates the standby compass.

O21. PROBE HEAT PANEL



1. Probe Heater Switch
2. OFF Light
3. Q-inlet Heat Switch

1. Probe Heater Switch

ON – Applies electrical power to heat:
- Captain's pitot.
- Q inlet.
- Attitude warning vanes

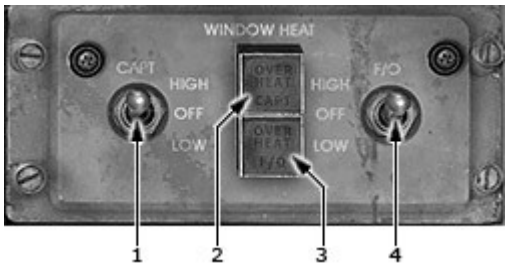
2. OFF Light

Monitors power to Q-inlet heater.
ON: Indicates power failure to Q-inlet heater.
OFF: System normal or control switch off.

3. Q-inlet Heat Switch

Controls power to Q-inlet heater.

O22.WINDOW HEAT PANEL



1,4. Window Heat Switches

2,3. Window Overheat Lights

1,4 Window Heat Switches

With the switch in either HIGH or LOW the overheat protection system may be tested by pressing the overheat light cap. This applies power to the windows and after about one second:

-a simulated overheat condition is created,
-the light illuminates,
-power is removed and must be reset.

Note

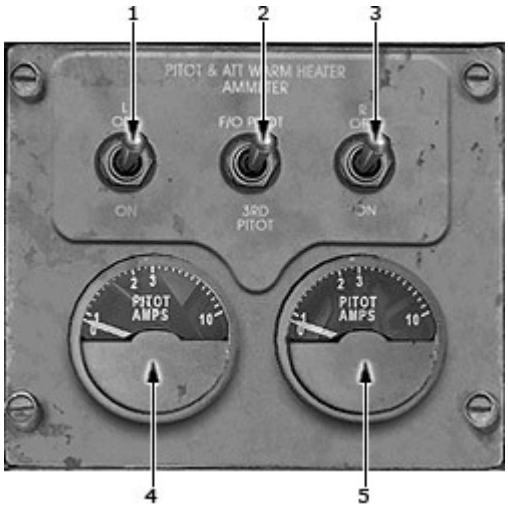
To reset power after actual or test overheat, select window heat control to OFF, then HIGH or LOW.

2,3. Window Overheat Lights

ON:
- respective anti-iced windows have overheated and power has been removed (power must be reset)
OR
- power to respective system has failed

OFF:
System normal.

O23. PITOT STATIC HEAT PANEL



1. Captain's Pitot and Attitude Warning Sensor Heat Switch

2. Ammeter Switch

3. First Officer's Pitot and Attitude Warning Sensor Heat Switch

4. Captain's Pitot Heater Ammeter

5. Fiirst Officer's or 3rd Pitot Heater Ammeter

1. Captain's Pitot and Attitude Warning Sensor Heat Switch

Controls power to:
- captain's pitot heater,
- both attitude sensor heaters.

2. Ammeter Switch

F/O PITOT: Ammeter indicates current first officer's pitot heater.
3RD PITOT: Ammeter indicates current to 3rd pitot heater.

3. First Officer's Pitot and Attitude Warning Sensor Heat Switch

Controls power to:
- first officer's pitot heater,
- both attitude sensor heaters (B-ADV).

4. Captain's Pitot Heater Ammeter

Indicates current to captain's pitot heater.

5. First Officer's or 3rd Pitot Heater Ammeter

Indicates current to selected pitot heater.

O25. STANDBY MAGNETIC COMPASS

1. Compass Correction Card

FORWARD AISLE STAND

P01. DOPPLER NAVIGATION CONTROLLER *(See page 23 for details)*
P02, P06. FLIGHT DIRECTOR CONTROLS
P03. RADAR CONTROL PANEL
P04. RADAR
P05. CIVA-INS CONTROL PANEL
P07. TRANSPONDER CONTROL PANEL

P02, P06.FLIGHT DIRECTOR CONTROLS

Note:
Flight director is connected with the autopilot.
Do not engage the autopilot if you need to use F/D only.

1. Pitch Command Control Knob
2. F/D Mode Selector
3. Altitude Hold

1. Pitch Command Control Knob

Positions pitch command bar to selected pitch angle.

2. F/D Mode Selector

Selects flight director mode.

VOR, HDG and NAV/LOC:
- Pitch command bar manually positioned by pitch command control knob.
- Roll command bar positioned by VOR or HDG steering commands from flight director computer.

NAV/LOC:
- Pitch command bar manually positioned by pitch command control knob.
- Roll command bar positioned by Doppler Navigation System or or CIVA INS steering commands from flight director computer. See Doppler Navigation System Section for details.

APP AUTO/MAN:
- Pitch command bar positioned by ILS glide slope steering commands from flight director computer.
- Roll command bar positioned by ILS localizer steering commands from flight director computer.

3. Altitude Hold

Pitch command bar commands pitch input to hold constant altitude.

WEATHER RADAR - THEORY OF OPERATION

The primary use of this radar is to aid the pilot in avoiding thunderstorms and associated turbulence. Since each operator normally develops specific operational procedures for use of weather avoidance radar, the following information is presented for use at the operator's discretion.

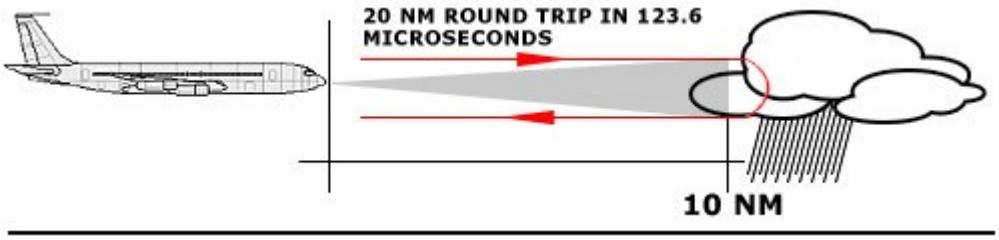
Operational techniques for the radar are similar to earlier generation weather avoidance radars. The proficient operator manages antenna tilt control to achieve best knowledge of storm height, size, and relative direction of movement.

RADAR PRINCIPLES

Radar is fundamentally a distance measuring system using the principle of radio echoing. The term RADAR is an acronym for Radio Detecting and Ranging. It is a method for locating targets by using radio waves. The transmitter generates microwave energy in the form of pulses. These pulses are then transferred to the antenna where they are focused into a beam by the antenna. The radar beam is much like the beam of flashlight. The energy is focused and radiated by the antenna in such a way that it is most intense in the center

of the beam with decreasing intensity near the edge. The same antenna is used for both transmitting and receiving. When a pulse intercepts a target, the energy is reflected as an echo, or return signal, back to the antenna. From the antenna, the returned signal is transferred to the receiver and processing circuits located in the receiver transmitter unit. The echoes, or returned signals, are displayed on an indicator.

Radio waves travel at the speed of 300 million meters per second and thus yield nearly instantaneous information when echoing back. Radar ranging is a two-way process that requires 12.36 micro-seconds for the radio wave to travel out and back for each nautical mile of target range. As shown in the distance illustration below, it takes 123.6 micro-seconds for a transmitted pulse of radar energy to travel out and back from an area of precipitation 10 nautical miles away.

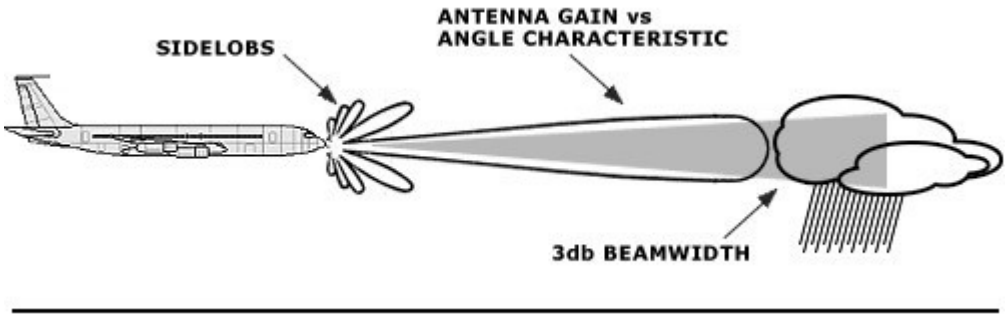


WEATHER RADAR PRINCIPLES

Airborne weather avoidance radar, as its name implies, is for avoiding severe weather, not for penetrating it. Whether to fly into an area of radar echoes depends on echo-intensity, spacing between the echoes, aircraft capabilities and pilot experience. Remember that weather radar detects only precipitation drops; it does not detect minute cloud droplets, nor does it detect turbulence. Therefore, the radar provides no assurance of avoiding instrument weather in clouds and fog. The indicator may be clear between intense echoes; this clear area does not necessarily mean it is safe to fly between the storms and maintain visual sighting of them.

RADAR BEAM ILLUMINATION

Probably the most important aspect of a weather radar is the antenna beam illumination characteristic. To make a proper interpretation of what you are seeing on the display, you must have an understanding of what the radar beam "is seeing". The following figure is a side view of the radar beam characteristic with a storm depicted at a distance that causes the size of the storm to just fill the 3 dB beamwidth. This would be the typical situation for a storm at approximately 40 nautical miles with a 12 inch diameter antenna. It's important to understand and visualize this situation, to enhance your understanding of the rest of this manual.



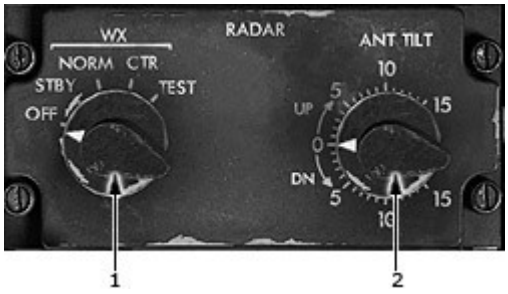
RADAR REFLECTIVITY

What target will reflect the radar's pulses and thus be displayed on the indicator? Only precipitation will be detected by an X-band weather radar. Therefore weather radar does not detect clouds, thunderstorms or turbulence directly. Instead, it detects precipitation which may be associated with dangerous thunderstorms and turbulence. The best radar reflectors are raindrops and wet snow or hail. The larger the raindrop the

better it reflects. Because large drops in a small concentrated area are characteristic of a severe thunderstorm, the radar displays the storm as a strong echo. Drop size is the most important factor in high radar reflectivity.

The radar display has been calibrated to show five levels of target intensity: Black (level 0), and levels 1-4 grades of Amber.

P03. RADAR CONTROL PANEL

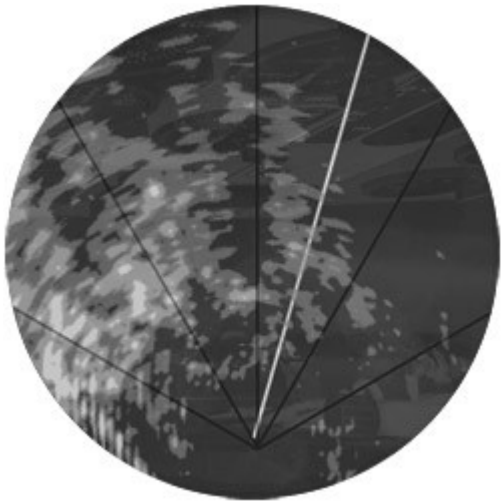


1. Radar Mode Selector

2. ANT TILT

1. Radar Mode Selector

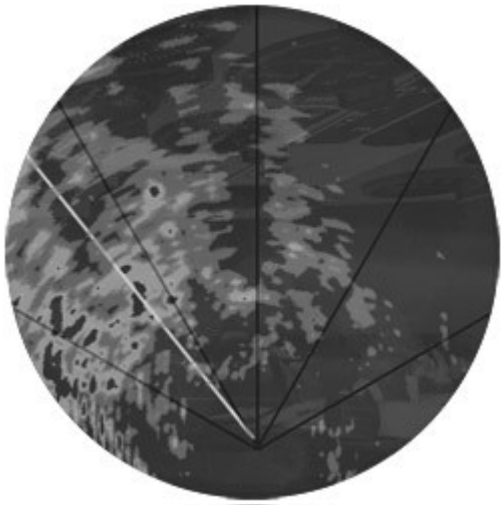
STBY - Fully energizes the system circuitry but no radar transmissions occur in the SBY mode of operation. The antenna is parked at 0 degrees azimuth and 30 degrees tilt down with the antenna drive motors locked.



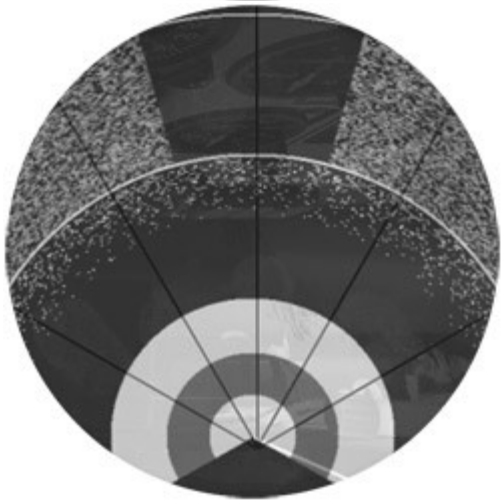
WX NORM - Selects the normal condition of operation for weather detection. The system will transmit after a 60 second warm-up time is completed. The radar system initializes to the Wx mode, 50 nm.

Note

The 60 second warm up period can be monitored upon power up of the system. When the knob is switched directly from OFF to ON mode, the display will blank. Just before the warm up period is complete, the screen will turn black for a few seconds, then the radar will begin transmitting and the screen will display radar returns. No radar transmissions occur until the warm up period is complete.



WX CTR - Selects weather-alert mode of operation. Black color for heavy and intense returns.



TEST – Transmitter de-energized. contrasting test signals are imposed on the indicator, signifying proper circuit functions.

ANT TILT

Permits manual adjustment of antenna tilt 15° up (right click) or down (left click) for best indicator presentation.

P04. RADAR DISPLAY UNIT

1. Range Selector Knob
2. Dimmer Knob
3. Erase Button
4. Gain Control Knob
5. Rotating Sweep Line
6. Weather Returns

1. Range Selector Knob

Clears the display and advances the indicator to the next range. The radar display ranges are: 50, 150, 300. (right click to increase range).

2. Dimmer knob

Controls brightness of the indicator display (right click to increase brightness).

4. Gain Control Knob

The gain knob adjusts the radar gain from 0 to -20 dB (CCW rotation reduces gain).

PREFLIGHT PROCEDURES

The system never transmits in the OFF, STBY or TEST modes.
Note: A 60 second warm up time period is required before the system will transmit.

1) Place the radar controls in the following positions:
- Function switch to TEST
- Tilt to UP 7

The test pattern will appear.

2) With the function switch in TEST or STBY, taxi to a clear area where there are no people, aircraft, vehicles, or metallic buildings within approximately 100 yards.

3) Rotate the function switch to NORM. The indicator will automatically display in the Wx mode. Weather targets will be displayed in grades of amber.

4) Select 50 nm range.

5) Select CTR mode to observe black contour areas (if any).

6) Repeat the manual tilt adjustment, this time between the 0 and down 15 degrees positions.

7) Return the function switch to TEST or STBY before taxiing!

8) When you are ready for weather detection (after takeoff or just before), place the function switch to NORM.

OPERATION IN-FLIGHT - GENERAL

It is the purpose of this section to help you become a proficient radar operator as soon as possible. However, it is realized that proficiency can only improve with usage. It is, therefore, recommended that the operator become familiar with the operation of the system during fair weather instead of while trying to penetrate a storm front.

This section concerns itself with a more detailed discussion of some of these controls and how to make the most efficient use of them.

Note

Your radar is a weather-avoidance device. It should never be used for weather-penetration. It will help you see and plan avoidance maneuvers around significant weather encountered during flight.

TILT MANAGEMENT

Effective antenna tilt management is the single, most important key to more informative weather radar displays. The prime factors must be kept in mind for proper tilt management:

- The center of the radar beam is referenced to the horizon by the aircraft vertical reference system.
- Adjusting the antenna tilt control will cause the center of the radar beam to scan above or below the plane of the attitude reference system.

When flying at high altitudes, the use of proper tilt management ensures observation of weather targets without over scanning. For example, a low altitude storm detected on the long range setting may disappear from the display as it is approached. While it may have dissipated during your approach toward the storm, don't count on it. It may be that you are directing the radiated energy from the antenna above the storm as you get closer. Judicious management of the antenna tilt control will avoid over-scanning a weather target.

EARLY DETECTION OF ENROUTE WEATHER

To set the antenna tilt to optimize the radar's ability to quickly identify significant weather, follow these steps:
1) Select the NORM mode of operation. Adjust Brightness control as desired.
2) Select the 50 or 150 nm range.
3) Adjust the antenna tilt to watch the strongest returns seen on the display.

TARGET RESOLUTION

The ability of a weather avoidance radar system to resolve and display two or more closely spaced targets is limited in range by the transmitted pulse width and display range and in azimuth by the antenna beam width.

RANGE RESOLUTION

The transmitter pulse width in the radar is 4 micro-seconds, yielding a receiver range resolution of approximately 1/3 nautical mile.

AZIMUTH RESOLUTION

The ability of the radar to resolve adjacent targets in azimuth is a function of the beam width of the antenna and the range to the target. The diameter of this radiated beam increases as it gets further away from the aircraft.

Targets separated by a distance less than the beam diameter (at the target distance) will merge and appear on the indicator as "one."

PATH PLANNING

Remember to plan a deviation path early. Simply skirting the red or magenta portion of a cell is not enough. Plan an avoidance path for all weather echoes which appear beyond 100 nautical miles since this indicates they are quite intense.

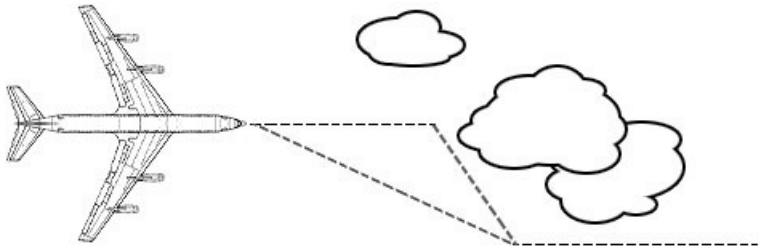
The most intense echoes are severe thunderstorms. Remember that hail may fall several miles from the cloud, and hazardous turbulence may extend as much as 20 nautical miles; therefore, echoes should be separated by at least 40 nautical miles before you fly between them. As echoes diminish in intensity, you can reduce the distance by which you avoid them.

PATH PLANNING CONSIDERATIONS

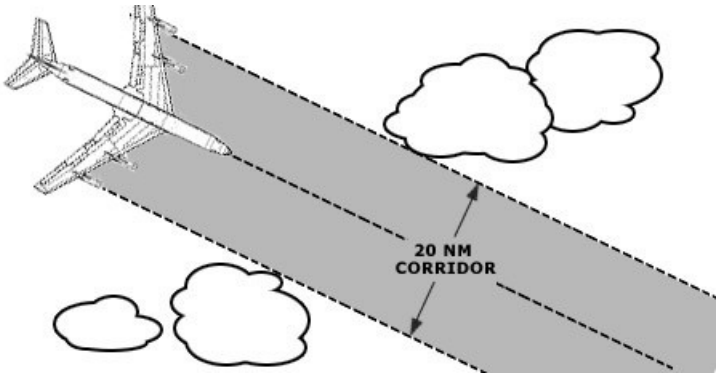
• Avoid cells containing magenta and red areas by at least 20 nautical miles.
• Do not deviate downwind unless absolute necessary. Your chances of encountering severe turbulence and damaging hail are greatly reduced by selecting the upwind side of the storm
• If looking for a corridor, remember corridors between two cells containing magenta and/or red areas should be at least 40 nautical miles wide from the outer fringes of the radar echo. The magenta displays areas of very heavy rainfall and statistically indicates a high probability of hail.

Note

Do not approach a storm cell containing magenta and red any closer than 20 nautical miles. Echoes should be separated by at least 40 nautical miles before attempting to fly between them.



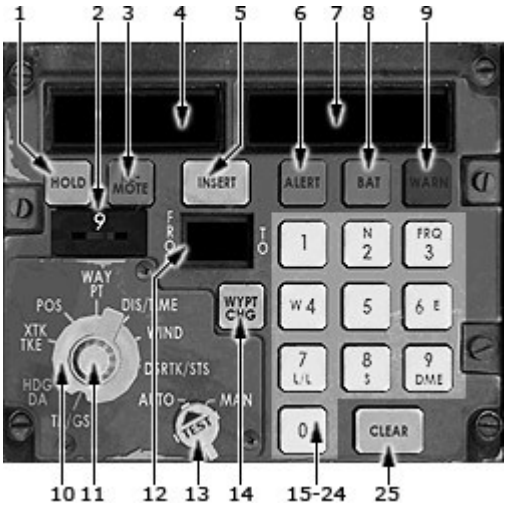
Cells beyond 75 nautical miles are areas of substantial rainfall, do not wait for red or magenta to appear. Plan and execute evasive action quickly to minimize "doglegging."



When a complete detour is impractical, penetration of weather patterns may be required. Avoid adjacent cells by at least 20 nautical miles.

A "Blind Alley" or "Box Canyon" situation can be very dangerous when viewing the short ranges. Periodically switch to longer-range displays to observe distant conditions. As shown below, the short-range returns show an obvious corridor between two areas of heavy rainfall but the long-range setting shows a larger area of heavy rainfall.

P05. CIVA-INS CONTROL PANEL



1. HOLD Key
2. Waypoint/DME Switch
3. REMOTE Key
4. Left Data Display
5. INSERT Key
6. ALERT Light
7. Right Data Display
8. BAT light
9. WARN Light
10. Data Selector
11. Dim Switch
12. From-To Display
13. Auto/Man Switch / TEST Switch
14. WYPT CHG key

15-24. Keyboard

25. CLEAR Key

Delco Carousel IV-A INS is freeware third-party software.
It works with 707 Captain in 2D mode only. INOP in VC.
To provide full VC compatibility we need additional tech info from the CIVA INS third-party developer.

P07. TRANSPONDER CONTROL PANEL

1. Function Selector
2. ATC Display Window
3. Mode Selector
4. Altitude Reporting Switch

5-6,8-9. Code Selector Knobs

7. ATC Ident Button
10. Relative Altitude Display Limit Selector

1. Function Selector

Selects operating mode. STBY mode – places transponder system to standby.

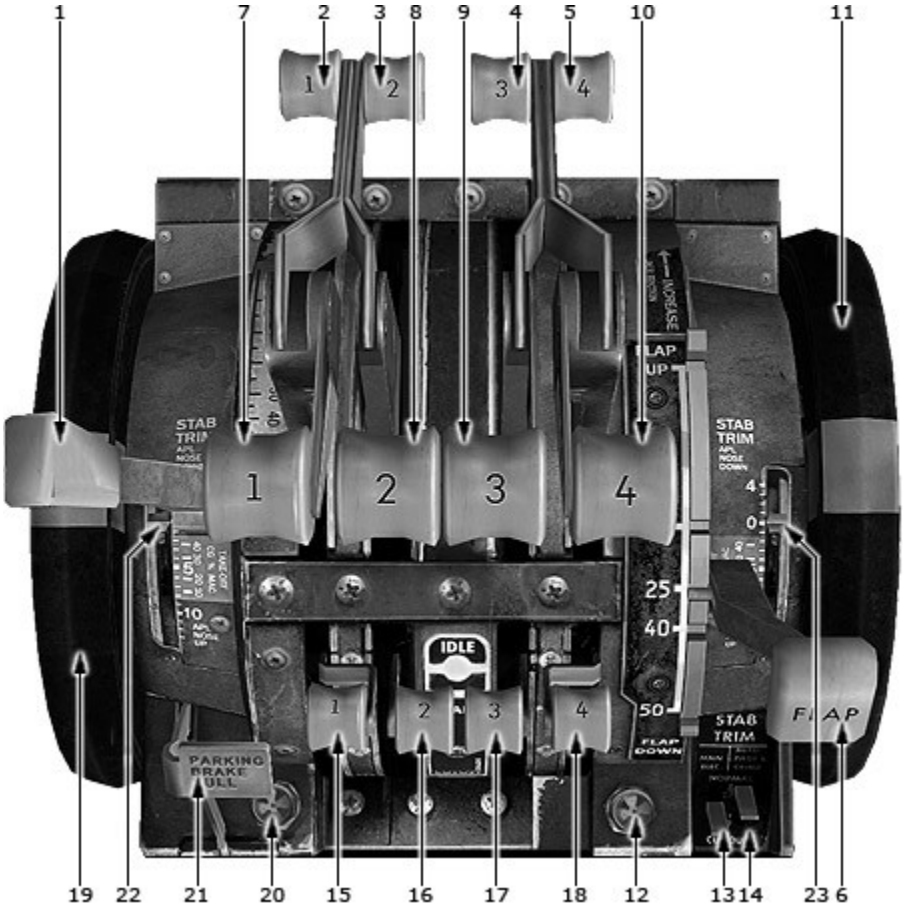
2. ATC Display Window

Displays Code set by ATC Code Selectors

5-6,8-9. Code Selector Knobs

Rotate to set code on ATC display Window
.

P08. CONTROL STAND



1. Speedbrake Control Lever and Indicator
2-5. Reverse Thrust Levers
6. Flap Control Lever
7-10. Engine Throttles
11,19. Stabilizer Trim Control Wheel
12. Stabilizer Trim Warning Light
13. Stabilizer Cruise Trim Switch
14. Mach Trim Switch
15-18. Engine Start Levers
20. Parking Brake Warning Light
21. Parking Brake Handle
22,23. Stabilizer Trim Indicator

1. Speedbrake Control Lever and Indicator

Controls symmetrical spoiler extension from 0 to 60 degrees.

2, 3, 4, 5 Reverse Thrust Levers

- Control reverse thrust from idle to maximum reverse
- Mounted on corresponding engine throttles.

Reverse lever positions:
- forward thrust
- idle reverse thrust
- reverse interlock:
Provides sufficient engine bleed air to position reverses.

Prevents further application of thrust until both reversers approach reverse thrust position.
Prevents application of forward thrust until reversers are in forward thrust position.
- spring stop:
Limits maximum reverse thrust. If necessary, may be overridden in an emergency.
- Maximum reverse thrust

Note

During application of reverse thrust, if a reverser goes to forward thrust, a follow-up mechanism in the reverse system will retard the reverse lever forward idle.
Similarly, during application of forward thrust, if a reverser goes to the reverse thrust position, the mechanism will retard a throttle to a low thrust level.

6. Flap Control Lever

The lever controls both inboard and outboard flap hydraulic drive units.

Five detented flap handle positions from 0 to 50 degrees are provided. The flap position is shown on two cockpit indicators.

Airplane	Flap position				
	0°	14°	25°	40°	50°
300B-Adv 300C	X	X*	X	X	X

* - Normal takeoff setting

DETENTS	PLACKARDS (Where shown)
0	KTS IAS
14	223
25	215
40	200
50	195

7-10. Engine Throttles

Control engine forward thrust from idle to maximum.
Actuate landing gear warning horn.

11,19. Stabilizer Trim Control Wheel

–Rotate whenever stabilizer is being positioned
–Contain integral handles which can be extended to manually trim stabilizer.
–10 revolutions equal one degree trim.

12. Stabilizer Trim Warning Light

An amber light on the control stand will illuminate when the stabilizer main electric trimmotor is operating, or when the cruise and autopilot trim motor is operated by the stabilizer cruise trim switch. The light will not be on when the autopilot operates the cruise and autopilot trim motor.

15-18. Engine Start Levers

Three engine start levers with CUTOFF-IDLE detents are on the control stand. This lever operates the windmill bypass and shutoff valve in the FCU. With this lever in the IDLE detent, fuel if supplied to the engine. In the CUTOFF detent, all fuel supply to the engine is shut off. With this lever in the IDLE detent and with the engine start switch in the GROUND or FLIGHT position, the 20-joule ignition system is energized.

The start levers control the main fuel shutoff valves when in the CUTOFF position.

–Used to start and stop the engines.
–Connected by cables and linkage to each engineer's fuel control unit.
–Three detended positions (lifting knob enables movement):
CUTOFF: Fuel and ignition are cut off.
START: Ignition, then fuel are supplied.
IDLE: Fuel is supplied, ignition is cut off.

20. Parking Brake Warning Light

This red light on the control stand will illuminate when the parking brake handle is in the SET position.

21. Parking Brake Handle

The parking brake handle on the control stand can be set when the brakes are fully applied, to latch the brakes in the depressed position.

When the parking brake is set, hydraulic return from the main gear antiskid valves will be blocked and the anti-skid system will be de-energized.

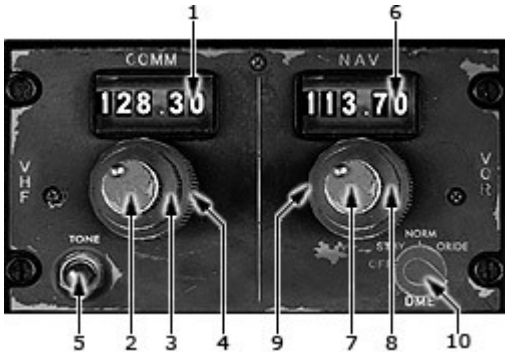
22,23. Stabilizer Trim Indicators

Green band calibrated in CG percentage.

AFT AISLE STAND

P09, P10. VHF NAV/COMM CONTROL PANEL
P11. AUTOPILOT PANEL
P12, P13. AUDIO SELECTOR PANEL
P14. AFT PEDESTAL PANEL

P09, P10. VHF NAV/COMM CONTROL PANEL



1. COMM Frequency Indicator

2,7. VOL

3,4. COMM Frequency Selectors

5. Tone

6. NAV Frequency Indicator

8,9 NAV Frequency Selectors

10. DME Function Switch

2. VOL

Rotating clockwise.
-Turns equipment on
-Increases receiver sensitivity and volume level
-ATC Menu will tune selected COM

5. Tone

Push button to transmit 400 Hz tone. Permits ground station to determine airplane location.

6. NAV Frequency Indicator

Displays the selected frequency and facility.

VOR – 108.00 to 111.85 all even-tenth MHz
112.00 to 117.95 all MHz

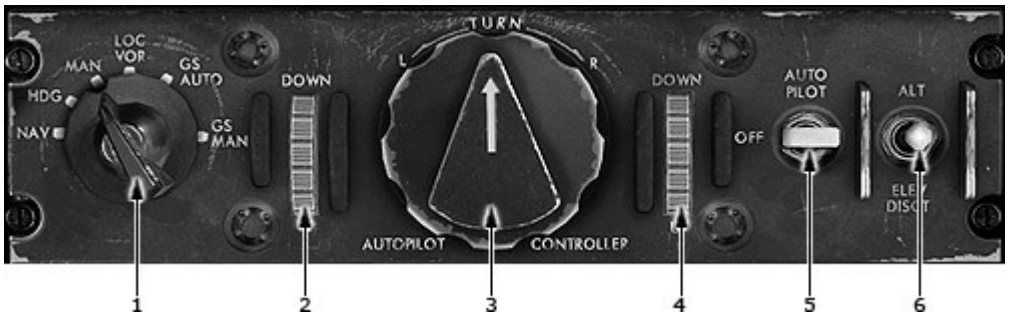
ILS – 108.10 to 111.95 all odd-tenth MHz

DME TACAN or VORTAC frequencies
–For short range (0-50 miles), 108.0 to 111.9
–For full range (0 to 199 miles), 112.0 to 117.9

8,9. NAV Frequency Selectors

Selects desired frequency and facility.

P11. AUTOPILOT PANEL



1. Autopilot Mode Selector
2,4. Pitch Trim Wheels
3. Turn Controller
5. Autopilot/Damper Switch
6. Altitude Hold/Elevator Disconnect Switch

1. Autopilot Mode Selector

- Spring loaded to MAN.
- Functions only when autopilot is engaged.

NAV (INS NAVIGATION MODE)
- Autopilot intercepts and steers the INS track selected with INS no.1

HDG (HEADING MODE)
- Autopilot follows selected heading indicated on Captain's HSI.

MAN (MANUAL MODE)
–Mode used to engage autopilot. Airplane will roll wings level and maintain existing pitch.
–Autopilot holds clutched compass heading, which can be adjusted with turn controller.
–Pitch can be adjusted with pitch controller.
–Mode selector will spring to MAN from any mode when turn controller is moved from center detent, or Captain's RADIO/INS switch is moved while the NAV or any radio mode.

LOC VOR (LOCALIZER VOR MODE)
In this mode the hiding reference is supplied by use of the VOR or localizer signal. If the airplane is placed on an intercept heading, the autopilot can capture and track the centerline of a selected VOR or ILS course.
With a VOR frequency tuned, when this mode is engaged, the autopilot maintains the present heading until within 1 dot (5 degrees) deviation from the captain's selected course. The V/L light goes amber when the VOR/LOC mode is selected and switches to green when the autopilot captures the course. At this time the previous heading reference is dropped and the airplane turns to track the course centerline. A course error signal (present heading vs. selected course) and a course deviation signal (present radial vs. selected radial) are used to command roll.
During capture and tracking, automatic crosswind corrections are provided.
When crossing over the station, the autopilot automatically switches from the VOR signal to the heading reference based on the captain's selected course for approximately 120 seconds. It then reverts to normal VOR tracking. This prevents nuisance corrections while in the cone of confusion.
With a LOC frequency tuned, operation is similar to VOR, with the following two exceptions:
- Capture is initiated at 2 dots (2 ½ degrees) deviation from the localizer centerline,
- The course set in the course counter determines only the initial heading to be flown since the localizer signal has a specific orientation. Theoretically, no matter where the course was set, the autopilot would eventually correct a mistake and fly down the localizer centerline. However, for a quick and smooth capture and tracking, the inbound front course is set in the course counter.

GS AUTO
This mode provides automatic glideslope and localizer capture from above or below the glideslope.
Roll command is the same as in the VOR/LOC mode with a LOC frequency tuned. In addition, following glidesfope capture, part of the roll command signal is sent to the yaw control system (either series or parallel yaw damper). This crossfeed signal coordinates rudder and aileron control to provide greater stability and tighter tracking of the localizer during a coupled approach.

Pitch command continues as in previous modes until the glideslope is intercepted at 1/4 dot deviation. At interception, the pitch trim knobs are deactivated and the altitude hold switch is released if engaged. The airplane is then controlled by the glideslope beam. For proper flightpath control down to minimums, the localizer signals are attenuated and bank angle is limited as a function of altitude. Attenuation begins at 1000 ft as determined By an altitude signal from the radio altimeter.

If the radio altimeter fails, the autopilot will automatically refer to a backup barometric altitude signal for attenuation during a 1500-ft descent from the glideslope intercept altitude.

GS MAN
Operation in the GS MAN mode is identical to that of the GS AUTO mode except that when GS MAN is selected, the autopilot immediately pitches and rolls the airplane to capture both the localizer and glideslope. Thus the airplane will fly to the localizer and glideslope centerline by the most direct route.

REVERSION TO MANUAL MODE
The autopilot reverts to the MAN mode from any mode if:
- the autopilot turn knob is used,
- the captain's compass transfer switch is used.

It reverts to MAN from radio modes if:
- the captain's deviation transfer switch is used,
- the series yaw damper goes off, which can be caused by moving the switch or by loss of rudder boost pressure.

After reversion, all modes may be reselected except the radio modes after loss of the series yaw damper.

Note

The autopilot should not be operated in LOC VOR, GS AUTO or GS MAN modes when the No.1 VHF navigation receiver is inoperative.

2,4 Pitch Trim Wheels

-Mechanically joined to one another.
-Free to rotate without limit in either direction.
-Activated when autopilot engaged so that when rotated, new attitude reference is set and airplane pitches to maintain it.
-Deactivated when ALT is selected or when glideslope is captured.
- Can effect a maximum pitch up or down of about 30°

3. Turn Controller

–Detented at center position
– May be rotated at 140 degrees in either direction.
–When rotated, causes airplane to turn and mode selector to return to MAN regardless of mode selected. Rate and amount of rotation determines rate and amount of airplane roll.
–Will remain in any position
–Can effect a maximum bank angle of 35°

5. Autopilot/Damper Switch

Spring-loaded to OFF. When positioned to
AUTOPILOT: Engages all (3 or 4) servos for normal operation.
DAMPER: Engages rudder servo on airplanes equipped with a parallel yaw damper. Position is deactivated on airplanes equipped with series yaw damper.

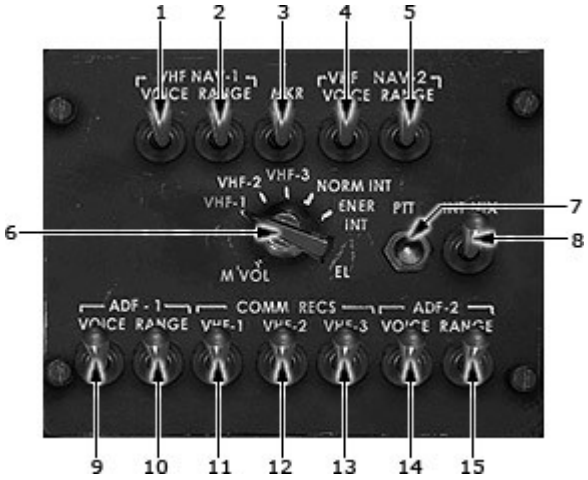
6. Altitude Hold/Elevator Disconnect Switch

Spring-loaded to OFF. When positioned to
ALT: Deactivates pitch trim wheels and controls pitch to maintain the existing pressure altitude. (Switch will return to OFF from this position when autopilot goes into a glideslope capture mode.)
ELEV DISC: Declutches elevator servo from pitch control system and deactivates horizontal stabilizer trim servo. Airplane is now flown by autopilot in roll and by the pilot for pitch.

Note:

Flight director is connected with the autopilot.
Do not engage the autopilot if you need to use F/D only.

P12,P13. AUDIO SELECTOR PANEL



1-5, 9-15. Communication Receiver Switches

6. Transmitter Selector

7. Microphone Push-to-talk Switch

8. Mic Selector Switch

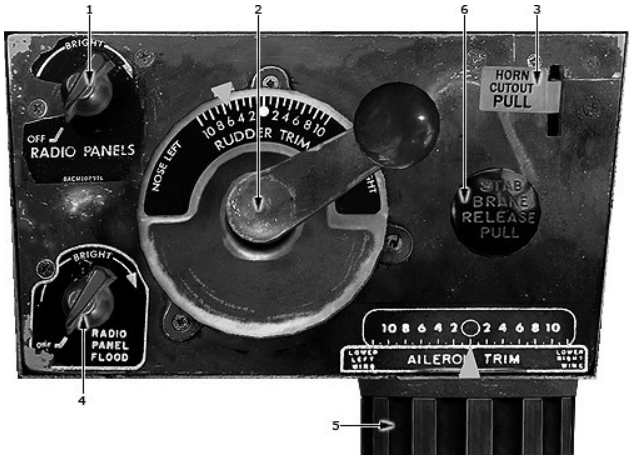
6. Transmitter Selector

Selects desired transmitter.

Stations Morse codes:

1 — NAV1 station
2 — NAV2 station
10 – ADF1 station
15 – ADF2 station

P14. AFT PEDESTAL PANEL



1. Radio Panels Lights Control

2. Rudder Trim Crank and Indicator

3. Horn Cutout Lever

4. Radio Panel Flood Light Control

5. Aileron Trim Control Wheel and Indicator

6. Stabilizer Brake Release Knob

1. Radio Panels Lights Control

Controls intensity for the dial lights on the electronic control panels

2. Rudder Trim Crank and Indicator

Movement of trim crank relocates neutral position of rudder pedals.

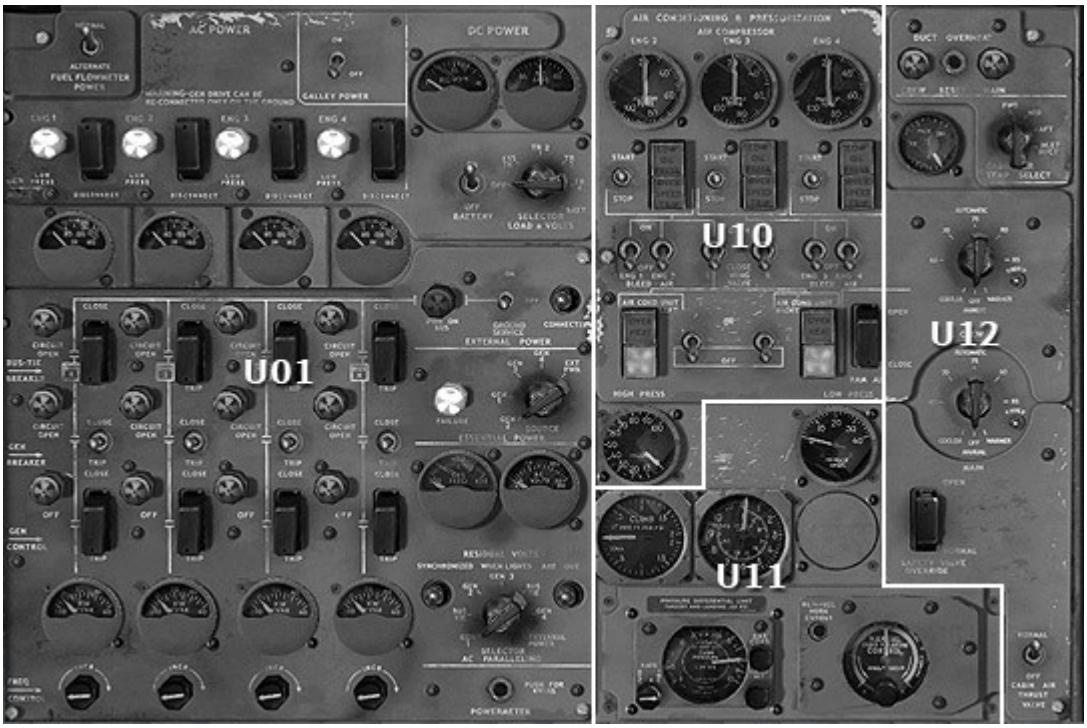
3. Horn Cutout Lever

PULL
–Silences landing gear warning horn unless flaps are at 40 or 50 position.

5. Aileron Trim Control Wheel and Indicator

Movement of trim wheel relocates neutral poition of control wheel.

FLIGHT ENGINEER UPPER PANEL



U01. ELECTRICAL PANEL
U10. PNEUMATIC SYSTEM PANEL
U11. CABIN ALTITUDE PRESSURE SYSTEM PANEL
U12. AIR CONDITIONING PANEL

U01. ELECTRICAL PANEL

1. Fuel Flowmeter Power Selector
2. Galley Power Switch
3. DC Power Voltmeter
4. DC Power Loadmeter
5-8 Generator Drive Low Pressure Lights
9-12 Generator Drive Disconnect Switches
13. Battery ON/OFF (master switch)
14. DC Meters Selector
15-18 Gen Drive Oil Temp Rise Gage
19. Power on BUS Light
20. External Power Switch
21. External Power Connected Light (Clear)
22-25. BTB Circuit Open (Trip) Light
26-29 Bus Tie Breaker Switch
30-33 GB Circuit Open (Trip) Light
34-37 Generator Breaker Switch
38-41. GCR OFF (Trip) Light
42-45 Generator Control Relay (GCR) Switch
46-49. KW, KWAR Meter
50-53. Frequency Control Knob

54. Essential Power Failure Warning Light
55. Essential Power Source Selector
56. Frequency Meter
57. AC Voltmeter
58,59. Synchronizing Lights (Clear)
60. AC Paralleling Selector
61. Powermeter Button

1. Fuel Flowmeter Power Selector

When positioned to:
NORMAL: The flowmeters are powered from P2 through a static frequency controller which maintains 400 Hz.

ALTERNATE: The flowmeters are powered directly from P1, in which case flowmeter accuracy is maintained only if bus frequency is held at 400 Hz. (Expect 1% error for each 4 Hz deviation from 400 Hz.)

3. DC Power Voltmeter

Indicates DC voltage of selected TR unit or battery.

4. DC Power Loadmeter

Indicates current load of selected TR unit or battery. With the BATT position selected:
-shows negative while charging
-shows positive while supplying load.

5-8. Generator Drive Low Pressure Lights

ON: CSD oil pressure below minimum. Caused by:
- CSD disconnected.
- engine shutdown, or
- low oil quantity.

During turbulence, light may come on intermittently, CSD operation is normal.
OFF: CSD oil pressure normal.

9-12. Generator Drive Disconnect Switches

- Disconnects CSD drive from engine; generator deactivated.
- Trips GB.

Note
The generator drive can only be reconnected on the ground.

13. Battery Switch

ON:
- battery power available to battery bus on P6
- allows battery to be charged
- permits checking external TR voltage.

OFF:
- battery power not available to battery bus on P6, but still available to aux battery bus on P6.
- Permits checking battery voltage.

14. DC Meters Selector

Connects loadmeter and voltmeter to selected source.
OFF: loadmeter and voltmeter deactivated.

15-18 Gen Drive Oil Temp Rise Gage

- Displays difference between oil-in and oil-out temperature.

- Reflects generator load on CSD.
- Range marks coincide with generator KW loads.
- Green band: safe.
- Yellow band: caution.

20. External Power Switch

(Magnetically held to ON and GROUND SERVICE)
ON:
- All GBs trip,
- PWR ON BUS light comes on
- External power is connected to sync-tie bus (if BTBs closed, external power is connected to generator load buses),
- Essential power can be supplied from external power.

GROUND SERVICE:
Powers the 28 VOLT SERVICE LTS bus on P1 with:
- 28V ac if 115/200V ac external power connected
- 28V dc if 115/200V dc external power connected.

OFF:
- The switch will automatically trip to OFF from either the ON or GROUND SERVICE position if the external power supply is interrupted,

–The switch will also trip to OFF from the ON position when a GB is closed or when there is a sync-tie bus fault.

21. External Power Connected Light (Clear)

ON – Ground power available at external power connection.
OFF- External ac power not available.

22-25 BTB Circuit Open (Trip) Light

ON: BTB tripped and generator and its load bus are isolated from the sync-tie bus.
OFF: BTB closed.

26-29. Bus Tie Breaker Switches

(Guarded and spring loaded to center position)
CLOSE:
- Connects generator and/or its load bus to the sync-tie bus.
- No autoparalleling protection provided.

TRIP: Disconnects generator and/or its load bus from the sync-tie bus.

30-33. GB Circuit Open (Trip) Light

ON: GB tripped and generator and its load bus are isolated from the sync-tie bus.
OFF: GB closed.

34-37. Generator Breaker Switches

CLOSE:
- Connects generator to its distribution bus and sync-tie bus through BTB.
- Autoparalleling protection is provided.

TRIP: Isolates generator from load bus and sync-tie bus.

38-41 GCR OFF (Trip) Light

ON: GCR open. Generator is deactivated.
OFF: GCR closed.

42-45. Generator Control Relay (GCR) Switch

(Guarded and spring loaded to center position)
CLOSE:
- Connects VR output to generator field; generator activated.
TRIP: Disconnects VR output from generator field; generator activated.

46-49 KW, KWAR Meter

Indicates generator real (KW) or reactive (KVAR) load. Indication is controlled by Powermeter Button #61.

50-53. Frequency Control Knobs

When rotated;
- Permits frequency adjustment of an isolated generator.
- Balances Kw loads when generators paralleled

54. Essential Power Failure Warning Light

ON – loss of essential power.
OFF: Essential power being supplied.

55. Essential Power Source Selector

Selects power source for essential AC bus.

56. Frequency Meter

Indicates frequency as selected.
-generator (isolated)
-bus tie (sync-tie bus), or
-external power.

57. AC Voltmeter

Indicates voltage as selected.
-generator (isolated)
-bus tie (sync-tie bus), or
-external power.
A 0 to 30 scale is used when checking residual voltage of an isolated generator. A generator must be isolated to check its voltage. The voltmeter will indicate bus tie voltage if a generator position is selected when generators are operating parallel.

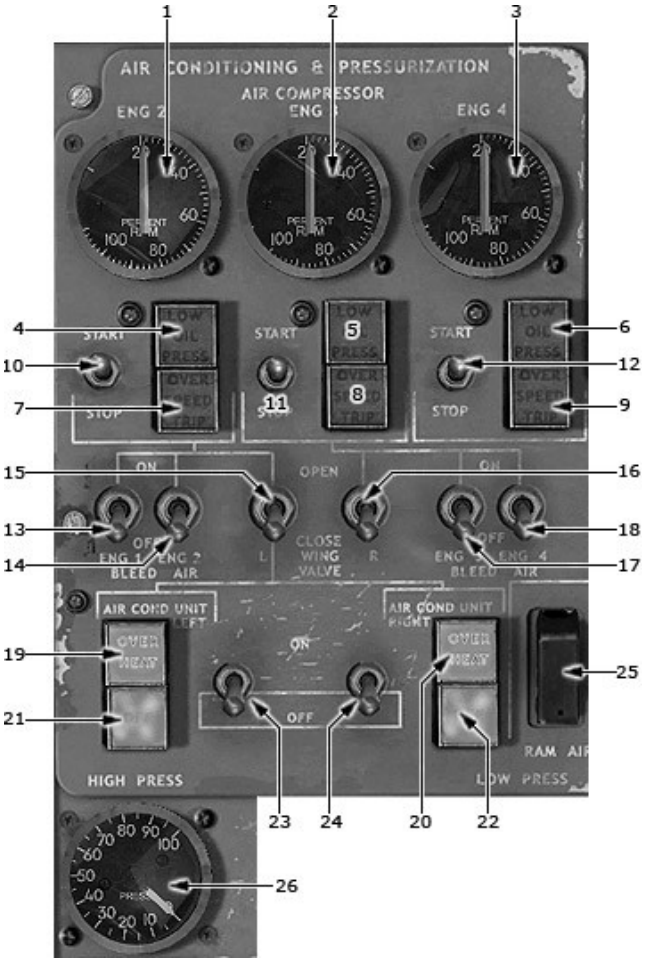
60. AC Paralleling Selector

Connects frequency meter and voltmeter to:
-generator
-bus tie (sync-tie bus), or
-external power.
Connects sync lights for paralleling

61. Powermeter Button

Changes U03 ELECTRICAL SYSTEM PANEL Power Meters indication from real (KW) to reactive (KVAR) load display.

U10. PNEUMATIC SYSTEM PANEL



1-3. Air Compressor Tachometers

4-6. Turbocompressor Low Oil Pressure Lights (Amber)

7-9. Turbocompressor Overspeed Trip Lights (Amber)

10-12. Turbocompressor Switches

13,14,17,18. Engine Bleed Air Switches

15,16. Wing Valve Switches

19,20. Air-Conditioning Unit Overheat Light

21,22. Air-Conditioning Unit OFF Light

23,24. Left & Right Air-Conditioning Unit Pack Switches

25. Ram Air Switch

26. Air Supply Duct Pressure Gage

1-3. Air Compressor Tachometers

Indicates turbocompressor speed in percent of shaft rpm. (Indicator accuracy tolerance +/- 1,5%)
NORMAL INDICATIONS:
-shutdown – 20%
-normal maximum – 96%
-overspeed - 115%

4-6. Turbocompressor Low Oil Pressure Lights (Amber)

ON:
- Oil pressure is low, or
- has Turbocompressor shutdown due to mailfunctions.

Note

Light is wired through switch. When switch held momentarily to START, light goes on until oil pressure is normal. On all 300C airplanes, light is not wired through switch. Light is on any time turbocompressor is not operating.

OUT:
- Oil pressure is normal, or
– Turbocompressor has been stopped by switch.

7-9. Turbocompressor Overspeed Trip Lights (Amber)

- Turbocompressor has reached overspeed condition and has automatically shut down. Can be reset only on the ground.
- Shutoff valve has closed
- Pressure regulator valve has closed.

10-12. Turbocompressor Switches

Spring-loaded to center position.
START
-opens turbine inlet shutoff valve
-arms open coil of pressure regulator
-arms LOW OIL PRESS light.
STOP
-closes turbine inlet shutoff valve
-disarms other start functions.

13,14,17,18. Engine Bleed Air Switches

Controls engine N1 bleed air valve.
ON: Opens valve.
OFF: Closes valve.

15,16. Wing Valve Switches

Controls wing valve in the pneumatic manifold.
OPEN: Opens valve.
CLOSE: Closes valve.

19,20. Air-Conditioning Unit Overheat Light

Lights when LEFT or RIGHT ACM compressor outlet temperature excessive Resets automatically when temperature normal

21,22. Air-Conditioning Unit OFF Light

- Lights when LEFT or RIGHT pack valve automatically closed as result of excessive ACM turbine inlet temperature condition.
- Control is locked out until reset by DUCT OVERHEAT RESET button.

23,24. Left & Right Air-Conditioning Unit Pack Switches

ON:
-Opens pack valves
-Arms MAIN and CREW temperature selectors
OFF:
-Closes pack valves (with both switches OFF, MAIN and CREW temperature selectors deactivated and cockpit and main cabin temperature valves driven to full cold.
Warning: Airplane will depressurize if both pack switches are OFF.

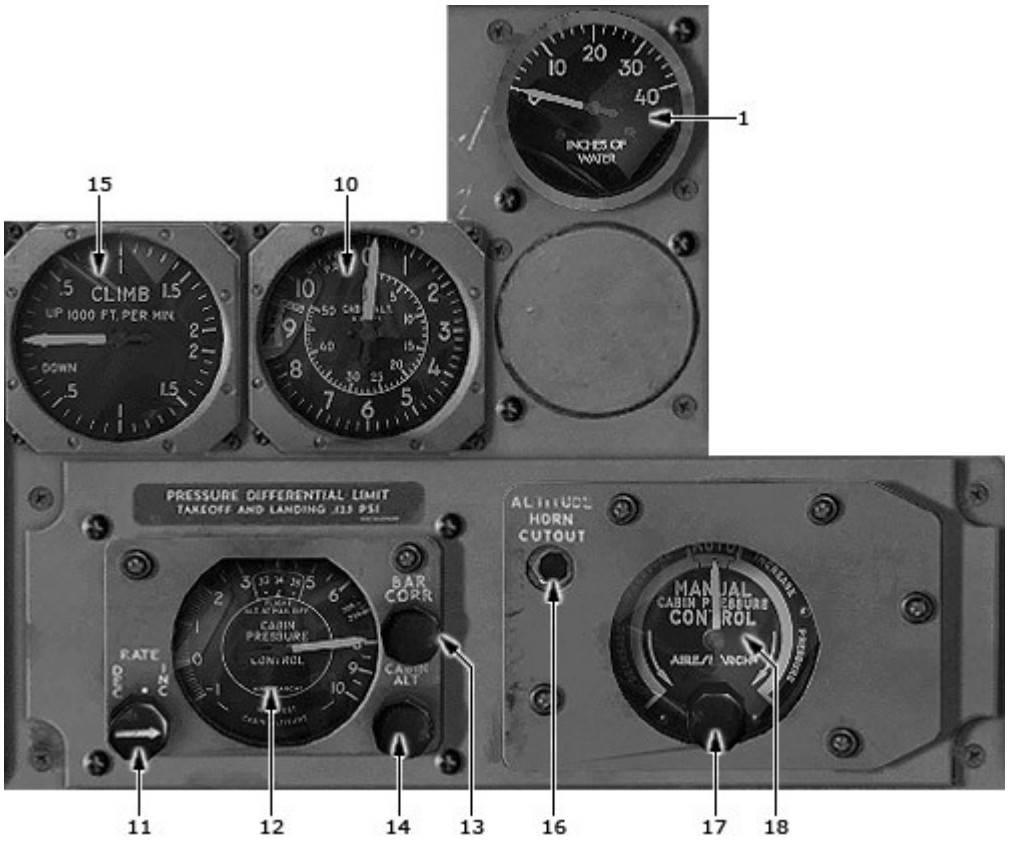
25. Ram Air Switch

Controls both left and right ram air valves.
CLOSE is the normal guarded position.
OPEN drives both ram air valves open, admitting ambient air for ventilation (unpressurized flight only)

26. Air Supply Duct Pressure Gage

Indicates pressure in pneumatic manifold. Shows pneumatic manifold air pressure in 5-psi increments.

U11. CABIN ALTITUDE PRESSURE SYSTEM PANEL



1. Conditioned Air Duct Pressure Indicator
10. Cabin Altimeter
11. Rate Knob
12. Automatic Cabin Pressure Control Indicator
13. Barometric Correction Knob
14. Cabin Altitude Knob
15. Cabin Rate of Climb Indicator
16. Cabin Altitude Warning Horn Cutout Switch
17,18. Manual Cabin Pressure Control Indicator

1. Conditioned Air Duct Pressure Indicator

Displays pressure differential between main cabin and distribution duct. Reflects ventilation flow rate.
6-10 INCHES – Desired operating rate.
GREEN BAND – Operating range.

10. Cabin altimeter

Shows cabin pressure altitude in feet x 1000. Small needle indicates barometric altitude in feet x 1000.

11. Rate Knob

Adjusts cabin of change, as shown on Cabin Climb Indicator.
DEC: Establishes minimum change rate of about 50 fpm.
Centered pip (black triangle) position: Establishes change rate of about 300 to 500 fpm.
INC: Establishes maximum change rate of about 2000 fpm.

12. Automatic Cabin Pressure Control Indicator

Show selected cabin altitude.

13. Barometric correction knob

Sets barometric correction. Moves 28.0 to 31.0 in. Hg scale behind window to show correction applied.

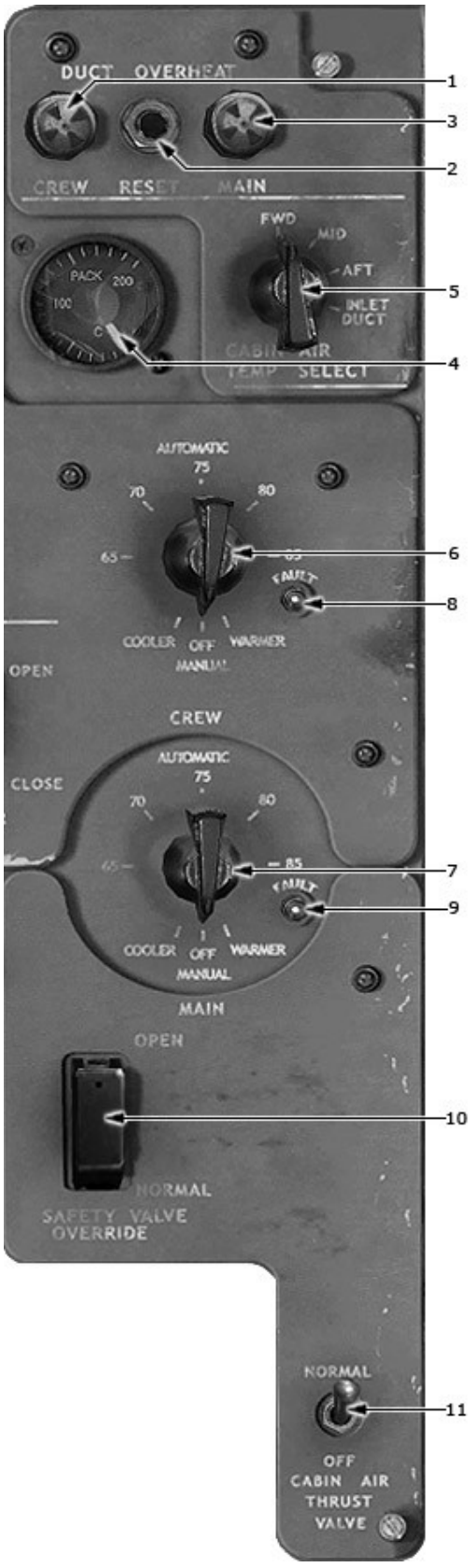
14. Cabin Altitude Knob

- Selects desired cabin altitude.

15. Cabin Rate of Climb Indicator

Shows rate of change in cabin altitude (FPMx1000).

U12. AIR CONDITIONING PANEL



1. Duct Overheat Light (Amber)
2. Duct Overheat Reset Button
3. Main Duct Overheat Light (Amber)
4. Cabin Air Temperature Indicator
5. Cabin Air Temperature Select Switch
6. Crew Temperature Selector
7. Main Temperature Selector

8,9 Fault Light (White Neon)

10. Cabin Pressure Override Switch
11. Cabin Air Thrust Valve Position Switch

1. Duct Overheat Light (Amber)

Illuminated
–Duct temperature 195°F or above
–Cabin temperature control valves positioned to full cold
–Automatic system inoperative until reset with reset switch when cooled.

2. Duct Overheat Reset Button

Resets DUCT OVERHEAT or AIR COND UNIT pack OFF condition.
For DUCT OVERHEAT (resets when duct temperature below 190°F)
-Reactivates temperature selector
-CREW or MAIN light goes out.
For AIR COND UNIT pack OFF:
-LEFT and RIGHT pack valve opens
-OFF light goes out.

3. Main Duct Overheat Light (Amber)

- Lights when CREW or MAIN duct temperature over 190°F
- CREW or MAIN temperature selector deactivated
- Temperature control valve automatically driven full cold.

4. Cabin Air Temperature Indicator

Shows °C air temperature of area selected by Cabin air temperature select switch.

5. Cabin Air Temperature Source Selector Switch

Arms TEMP indicator to show temperature of area selected. OR
On some airplanes AIR TEMP selects CABIN or DUCT temperature only.

7. Main Temperature Selector

AUTOMATIC:
- Arms regulator which modulates control valves to maintain selected 65 to 85°F temperature
- Arms FAULT light

MANUAL
- Deactivates regulator
- Deactivates FAULT light
- Allows fast, direct adjustment of control valves.

COOLER
- Drives control valves toward full cold OFF
- Selector spring loaded to this position
- Maintains position of control valves

WARMER
–Drives control valves towards full hot position

8,9. Fault Light (White Neon)

Shows mailfunction of regulator topping or anticipator sensing circuitry.

10. Cabin Pressure Override Switch

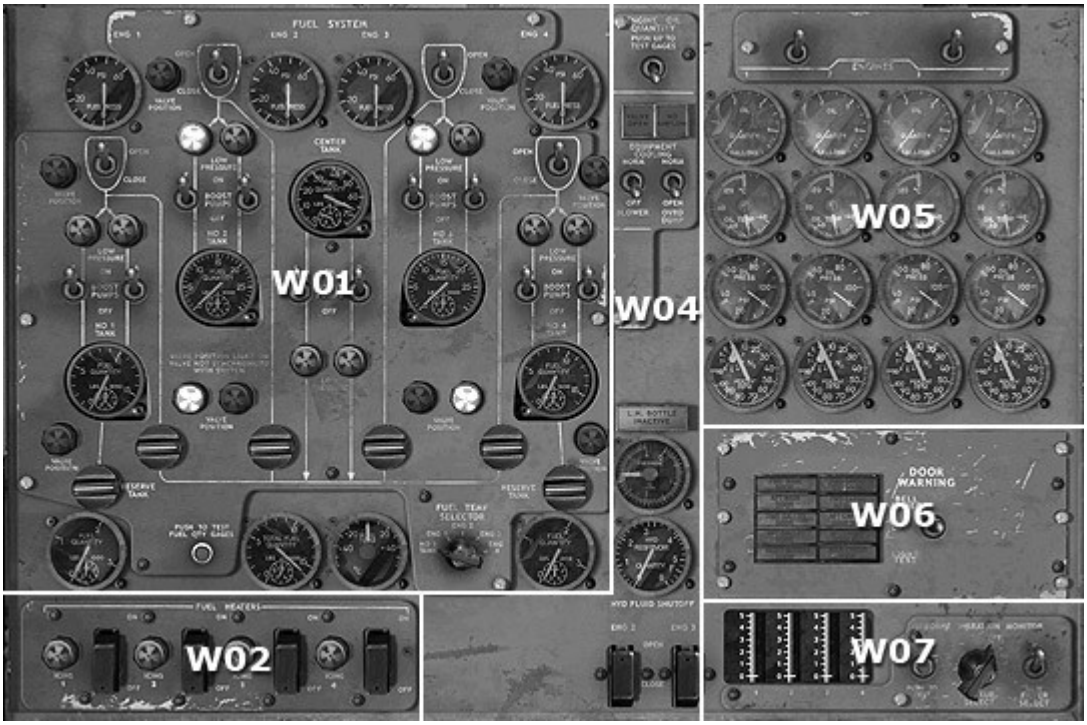
NORM (guard down)
-Deactivates FWD VALVE and AFT VALVE switches.
-Forward and aft outflow valves controlled pneumatically.

OVERRIDE (guard up)
- Arms FWD VALVE and AFT VALVE switches to permit alternate electrical positioning of forward and aft outflow valves.

11. Cabin Air Thrust Valve Position Switch

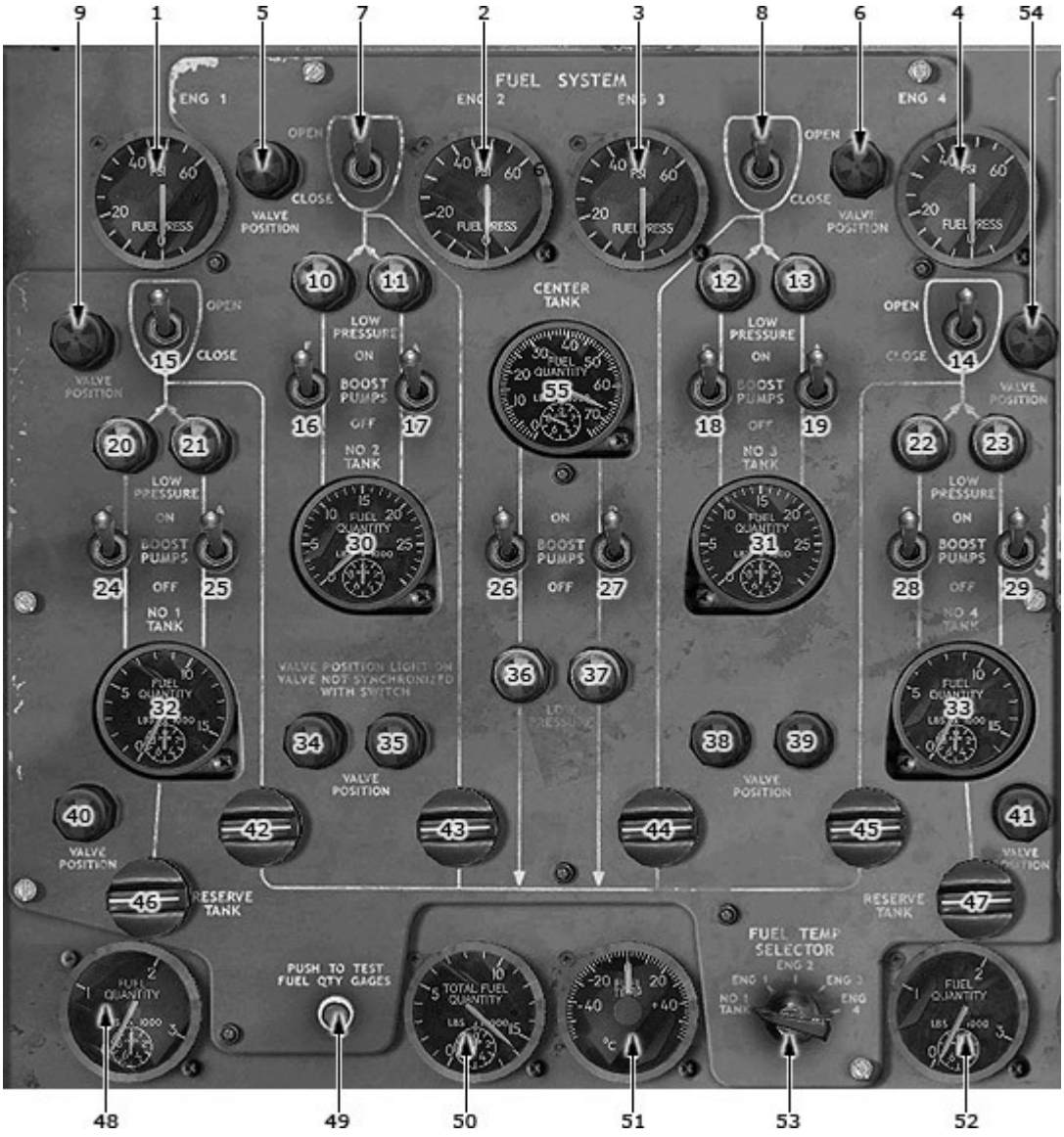
NORMAL: Allows the thrust-recovery valves to operate pneumatically.
OFF: Electrically overrides the thrust-recovery valves to closed position.

FLIGHT ENGINEER LOWER PANEL



W01. FUEL SYSTEM PANEL
W02. FUEL HEATERS PANEL
W04. HYDRAULIC PANEL
W05. ENGINES GAUGES
W06. DOOR ANNUNCIATOR PANEL
W07. AIRBORNE VIBRATION MONITOR

W01. FUEL SYSTEM PANEL



1-4. Engine 1,2,3,4 Fuel Pressure Gages
5, 6, 9, 54. Engine 2, 3, 1, 4 Valve Position (Transit) Lights (Blue)
7, 8, 14,15. Engine 2, 3, 4, 1 Fuel Shutoff Valve Switches
10-13, 20-23, 36, 37. Fuel Boost Pump Low Pressure Light
16,17,18,19,24,25,26,27,28,29 Fuel Boost Pump Switch
30-33,48,52,55. Fuel Quantity Gage
34, 35,38-41 Fuel Shutoff Valve In Transit Lights (Blue)
42-45. Manifold Valve Switches
46,47. Transfer Valve Switches
49. Push-To-Test Button
50. Totalizer Gage
51. Fuel Temperature Indicator
52. Fuel Quantity Gage
53. Fuel Temperature Selector

1-4. Engine 1,2,3,4 Fuel Pressure Gages

Indicates pressure at engine-driven fuel pump inlet.
Normal operating pressure is about:
-0 psi, pumps off
-15 psi, main tank pumps on
-40 psi, center tank pumps on.
Fuel pressure decreases as fuel flow increases. Pressure increases after shutdown due to expansion of fuel trapped in the engine feed line.

5, 6, 9. Engine 2, 3, 1, 4 Valve Position (Transit) Lights (Blue)

ON – during respective valve transit
OFF – Valve corresponds with the switch that activated it.

7, 8, 14,15. Engine 2, 3, 4, 1 Fuel Shutoff Valve Switches

OPEN: Permits fuel flow to engine.
CLOSE: Shuts off fuel flow to engine at the pylon. Valve closes and switch deactivated when fire handle pulled.

16, 17, 18, 19, 24, 25, 26, 27, 28, 29. Fuel Boost Pump Switch

Control main tank and center tank boost pumps.

10-13, 20-23, 36, 37. Fuel Boost Pump Low Pressure Light (Amber)

On when boost pump pressure is below 6 psi.

30-33, 48, 52. Fuel Quantity Gage

Indicates tank fuel quantity in LBx1000. The small needle indicates LBx100.

34, 35, 38-41. Fuel shutoff Valve In Transit Lights (Blue)

ON – during respective valve transit
OFF – Valve corresponds with the switch that activated it.

42-45. Manifold Valve Switches

Controls manifold valve.
-When turned horizontally, valve closes.
-When turned vertically, valve opens.

46, 47. Transfer Valve Switch

Control reserve-tank transfer valve.
-When turned horizontally, valve closes.
-When turned horizontally, valve closes.

49. Push-To-Test Button

Respective quantity indicator drives toward zero. Pointer returns to original position after switch released.

50. Totalizer Gage

Indicates sum of all fuel quantity indications in LB x 10,000. Small needle indicates in LB x 1000.

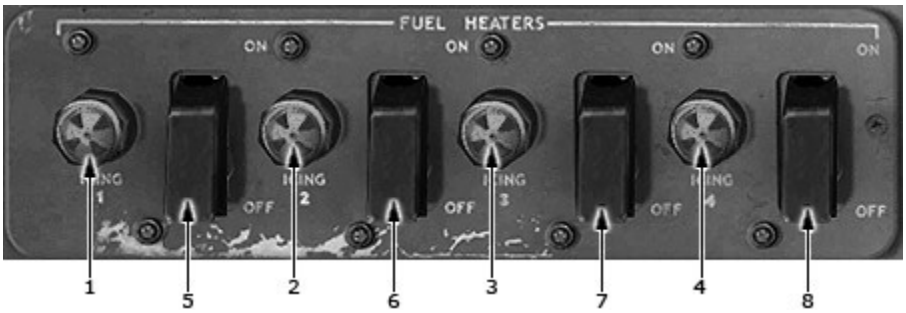
51. Fuel Temperature Gage

–Shows fuel temperature in degrees centigrade at location selected with FUEL TEMP SELECTOR.
–Requires ac power from P7 to operate.

53. Fuel Temperature Selector

–Arms FUEL TEMP gage according to selection.
–When positioned to
ENG 1, 2, 3 OR 4 : FUEL TEMP gage shows temperature of fuel downstream of respective engine's fuel filter.

W02. FUEL HEATERS PANEL



1-4. Fuel Icing Eng. 1,2,3,4 Lights (Amber)
5-8. Fuel Heaters Eng. 1,2,3,4 Switches

1-4. Fuel Icing Eng. 1,2,3,4 Lights (Amber)

Amber warning light that comes on when fuel flow through the filter is restricted by ice crystals or foreign matter.

5-8. Fuel Heaters Eng. 1,2,3,4 Switches

–Control the fuel-heater bleed-air valve.
–When positioned to
ON: Valve opens, N2 bleed air is ported through the fuel heater.
OFF: Valve closes.

W04. HYDRAULIC PANEL

1. Engine Oil Quantity Test Switch
2. No Airflow Warning Light
3. Valve Open Light
4. Blower Switch
5. Overboard Dump Valve Switch
6. L.H. Bottle Inactive Light (Red)
7. Engine Start Air Pressure Indicator
8. Hydraulic Reservoir Quantity Gage
9 . Hydraulic Fluid Shutoff Eng No.2 Switch
10. Hydraulic Fluid Shutoff Eng No.3 Switch

1. Engine Oil Quantity Test Switch

–Spring loaded
–Tests gage circuitry
–When pushed up, all four quantity gages are monitorized to zero.
–When released, gages return to pretest indications.

2. No Airflow Warning Light

ON: Insufficient cooling airflow. Lights within 10 minutes of airflow loss.

3. Valve Open Light

ON: Auto shutoff valve in any open position.
OUT: Auto shutoff valve fully closed.

4. Blower Switch

Provides electrical override of blower operation.
NORM: Blower operates continuously.
OFF: Stops blower.

5. Overboard Dump Valve Switch

Provides outlet to ambient pressure if blower is inoperative.
NORM: Overboard dump valve closed.
OPEN: Overboard dump valve open, bypassing auto shutoff valve in blower discharge duct.

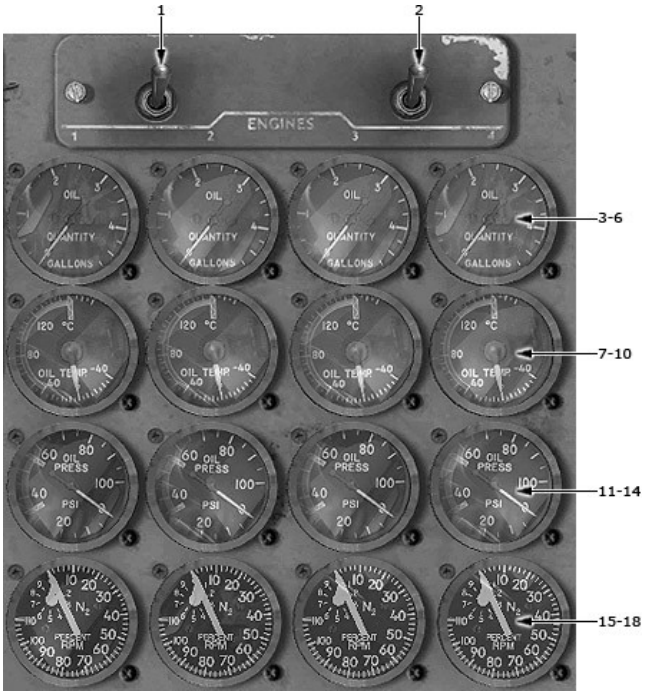
8. Hydraulic Reservoir Quantity Gage

Indicates utility reservoir quantity. 3.2 gal. Line is yellow.
Powered from a RUDDER SEL & OIL QTY ind cb on P5, TR bus No.3

10. Hydraulic Fluid Shutoff Eng No.3 Switch

When positioned to
OPEN: Opens hydraulic fluid shutoff valve to allow fluid to flow from reservoir to pump.
CLOSE: Closes the hydraulic fluid shutoff valve to respective engine-driven pump.

W05. ENGINES GAUGES



1,2. Source Selector Switches

3-6. No.1, 2, 3, 4 Engine Oil Quantity Gage

7-10 . No.1, 2, 3,4 Engine Oil Temperature Indicators

11-14. No.1, 2, 3,4 Engine Oil Pressure Indicators

15-18 . No.1, 2, 3, 4 Engine N_2 Tachometers

3-6. No.1, 2, 3, 4 Engine Oil Quantity Gage

–Indicates gallons of oil in respective tank
–Requires ac power from respective numbered bus for operation

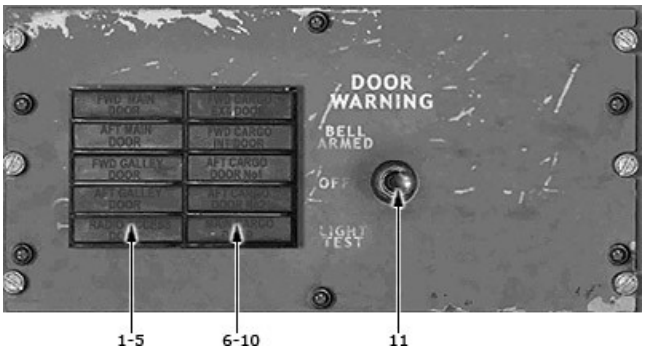
7-10. No.1, 2, 3,4 Engine Oil Temperature Indicators

–Shows oil temperature in degrees centigrade
–Requires ac power for operation: No.1,3 and 4 are powered by their respective numbered bus, No. 2 is powered by P7.
GREEN BAND – Normal operating temperature.
RED RADIAL @ 132°C – Maximum continuous temperature.
RED RADIAL @ 143°C – Maximum time limited temperature.

11-14. No.1, 2, 3,4 Engine Oil Pressure Indicators

–Displays the pressure of the oil being pumped to the engine bearings and gear trains in psi.
–Requires ac power for operation: No.1,3 and 4 are powered by their respective numbered bus, No. 2 is powered by P7.

W06. DOOR ANNUNCIATOR PANEL



1-10. Door Warning Annunciation Panel

11. Door Warning Switch

1-10. Door Warning Annunciation Panel

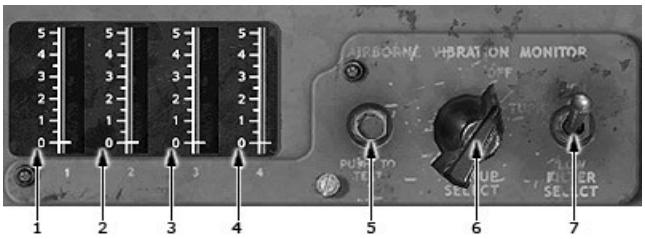
1. FWD Main Door Open Light
2. AFT Main Door Open Light
3. FWD Galley Door Open Light
4. AFT Galley Door Open Light
5. Radio Access Door Open Light
6. FWD Cargo External Door Open Light
7. AFT Cargo External Door Open Light
8. AFT Cargo Door No.1 Open Light
9. AFT Cargo Door No.2 Open Light
10. Main Cargo Door Open Light

11. Door Warning Switch

The lights indicate the open or closed status of the main entry, galley, radio access, and cargo doors. When a light is on, the corresponding door is unlocked.

BELL ARMED: this position is deactivated.
OFF: Door warning light system operates normally.
LIGHT TEST: (Momentary) illuminates all door warning lights.
During pretaxi, push to test the door warning lights. Any door with its light on must be visually checked for closure.

W07. AIRBORNE VIBRATION MONITOR



1-4. No.1, 2, 3, 4 Engine Vibration Indicators

5. Engine Vibration Push-To-Test Button

6. Engine Vibration Pickup Select Switch

7. Engine Vibration Filter Select Switch

5. Engine Vibration Push-To-Test Button

Used in conjunction with Pickup Select switch to check system operation.

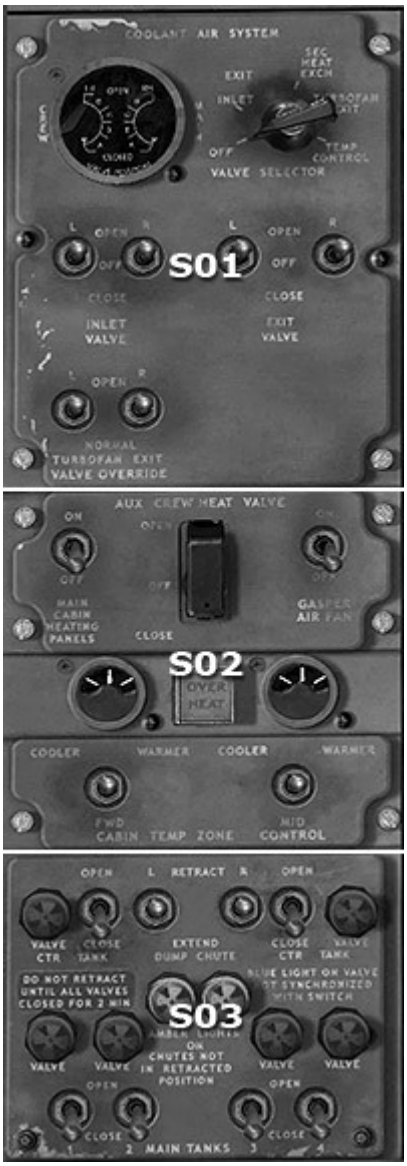
6. Engine Vibration Pickup Select Switch

When positioned to TURB or DIFF: Vibration sensed in the selected engine area is displayed on the respective indicator.

7. Engine Vibration Filter Select Switch

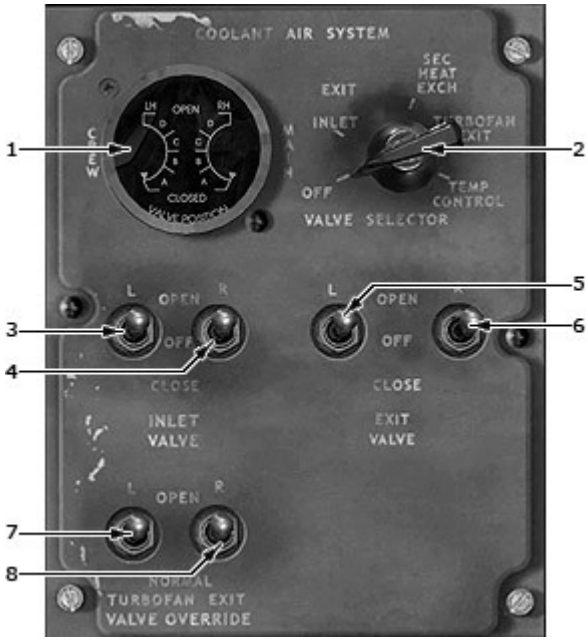
Being removed. If installed, leave in LOW

SECOND OFFICER'S AUXILIARY PANEL



S01. COOLANT AIR SYSTEM PANEL
S02. AUXILIARY TEMPERATURE CONTROL PANEL
S03. FUEL DUMP PANEL

S01. COOLANT AIR SYSTEM PANEL



1. Valve Position Indicator

2. Valve Selector Switch

3,4. Left & Right Inlet Valve Switches

5,6. Left & Right Exit Valve Switches

7,8. Left & Right Turbofan Exit Valve Override Switches

1. Valve Position Indicator

Shows positions of ram air and temperature control valves (set by VALVE SELECTOR switch) in 25% increments from CLOSED (cold_ to OPEN (hot)

-LH CREW scale displays LH ram air duct valves or cockpit temperature control valve.
-RH MAIN scale displays RH ram air duct valves or main cabin temperature control valve.

Note

Ram inlet is open 12 square inches when indicator shows inlet valve full closed.

2. Valve Selector Switch

Connects VALVE POSITION indicator as follows:
- OFF deactivates the indicator
- INLET gives ram air inlet valve display
- EXIT gives ram air exit valve display
- SEC HEAT EXCH gives secondary heat exchanger valves display
- TURBOFAN EXIT gives turbofan exit valves display
- TEMP CONTROL gives crew and main cabin temperature control valves display

3,4. Left & Right Inlet Valve Switches

Give manual control of left (L) and right (R) ram air inlet valves as follows:

-OPEN runs valve toward open position
-OFF is spring-loaded position
-CLOSE runs valve toward closed position

Note

INLET VALVE switches deactivated and inlet valves overridden open when main temperature control valve within about 35% of full closed (cold).

5,6. Left & Right Exit Valve Switches

Give manual control of left (L) and right (R) ram air exit valves as follows:

-OPEN runs valve toward open position

-OFF is spring-loaded position with no valve movement
-CLOSE runs valve toward closed position (if over 90% closed, associated turbofan exit valve will open)

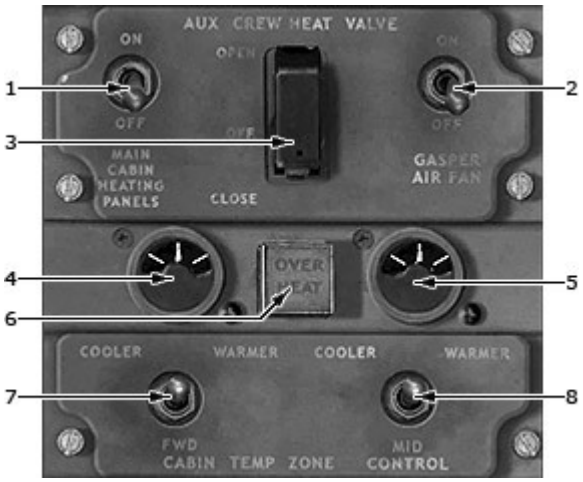
Note

EXIT VALVE switches deactivated and exit valves overridden open when main cabin temperature control valve within 35% of full closed (cold).

7,8. Left & Right Turbofan Exit Valve Override Switches

- OPEN overrides left (L) and right (R) turbofan exit valves open in flight.
- NORMAL, valve position controlled by landing gear oleo (SQUAT) switch.

S02. AUXILIARY TEMPERATURE CONTROL PANEL



1. Main Cabin Heating Panels Switch
2. Gasper Air Fan Switch
3. Auxiliary crew heat valve switch
4,5. FWD and MID Zone Indicators
6. Overheat Light
7,8. Cabin Temperature Zone Control Switch

1. Main Cabin Heating Panels Switch

ON – sends electrical power to heating panels in cargo door.
OFF – removes power from heating panels.

2. Gasper Air Fan Switch

When on, applies power to electric fan in air distribution bay to accelerate airflow through various eyeball outlets.

3. Auxiliary Crew Heat Valve Switch

Controls valve that allows hot pneumatic air to flow into cockpit distribution duct via an alternate route as follows:

-OPEN runs valve to open for alternate route of hot air supply.
-OFF is spring-loaded position.
-CLOSE is guarded and saftied with alternate route blocked.

4,5. FWD and MID Zone Indicators

Show zone valve positions and whether air to FWD or MID zones is cooler or warmer than that supplied to aft zone reference as follows:

-WARMER sector shows amount of FWD or MOD zone valve opening.
-0 (neutral) shows that air being supplied to that zone is same temperature as air being supplied to aft zone.
-COOLER sector shows amount of aft zone valve opening.

6. Overheat Light

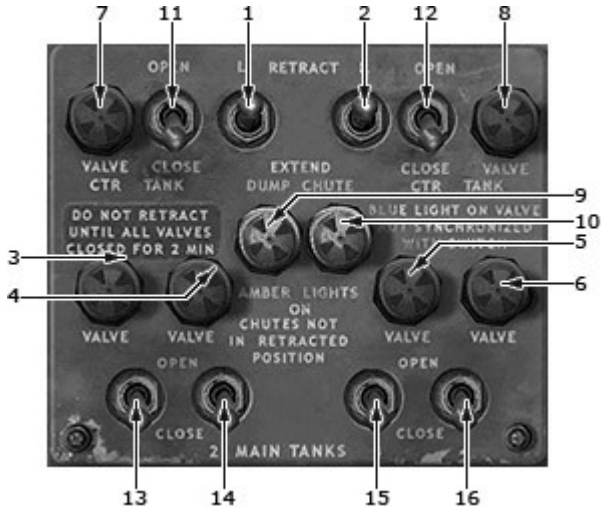
-When out, shows distribution duct air temperature to three main cabin zones below 190°F
-When illuminated, shows distribution duct temperature to any one main cabin zone over 190°F, related zone valve overridden closed, and valve manual control deactivated.

7,8. Cabin Temperature Zone Control Switch

These spring-loaded switches operate the zone control valves when moved from center position
-WARMER drives FWD or MID zone valve towards open with relative position shows on FWD or MOD zone indicator.
-COOLER drives respective zone valve toward closed. When valve closed, drives aft zone valve toward open, as shown by FWD and MID zone indicator.

S03. FUEL DUMP PANEL

The dump chutes extend from the lower wing surface outboard of the main gear. They must be fully extended before the dump valves can be opened. Standpipes in the main and center tanks prevent total duel depletions. The average total dump rate is 3150 pounds per minute. Total undumpable fuel is about 16,900 lb.



1-2. Dump Chute Switches

3-8. Dump Valve Light

9,10 Dump Chute Light

11-16. Fuel Dump Valve Switches

1,2. Dump Chute Switches

RETRACT: Releases downlocks and powers actuators to retract chutes.
OFF: Removes power from chute actuators.
EXTEND: Releases uplatches and powers actuators to extend chutes.

3-8. Dump Valve Light

ON: Dump valve and control switch not in agreement.
OFF: Dump valve and control switch in same position.

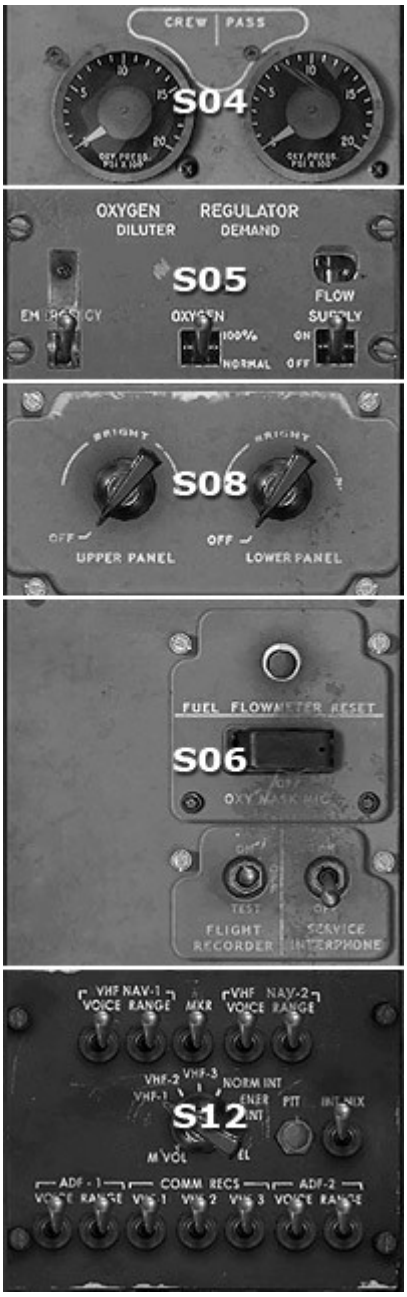
9,10 Dump Chute Light

ON: Chute not retracted.
OUT: Chute retracted.

11-16. Fuel Dump Valve Switches

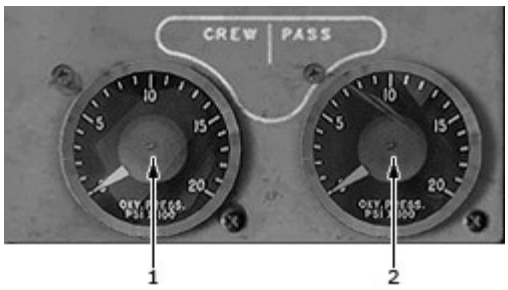
Control main tank and center tank dump valves. Switches 1 and 4 also control adjacent reserve tank transfer valve.
Armed only when dump chute is down and locked.

SECOND OFFICER'S AUXILIARY 2 PANEL



S04. OXYGEN PRESSURE PANEL
S05. OXYGEN PANEL
S06. SERVICE PANEL
S08. LIGHTS CONTROL PANEL
S12. AUDIO SELECTOR PANEL

S04. OXYGEN PRESSURE PANEL



1. Crew Oxygen Gage
2. Passenger Oxygen Gage

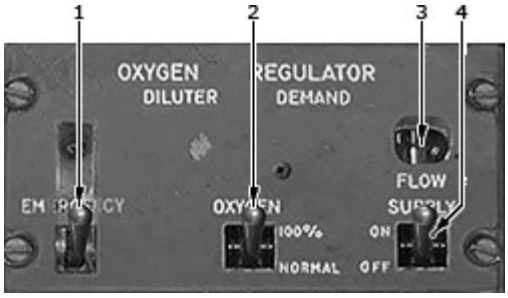
1 Crew Oxygen Gage

Indicates pressure in crew oxygen cylinders

2. Passenger Oxygen Gage

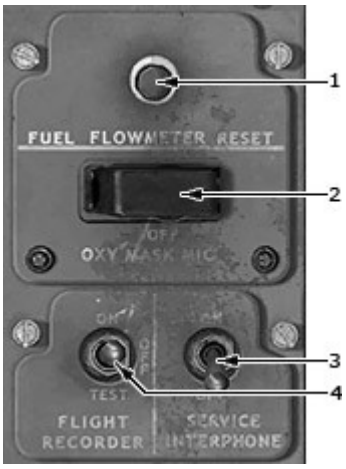
Indicates pressure in passenger oxygen cylinders.

S05. OXYGEN PANEL



1. Oxygen Emergency Lever
2. Oxygen Diluter Lever
3. Oxygen Flow Indicator
4. Oxygen Supply Lever

S06. SERVICE PANEL



1. Fuel Flowmeter Reset Button
2. Oxy Mask Mic Switch
3. Service Interphone Switch
4. Flight Recorder Master Switch

2. Oxy Mask Mic Switch

ON: Connects oxygen mask microphone to transmitter selected with MIC SELECTOR button on audio selector panel.
OFF: Guarded position with oxygen mask microphone inoperative.

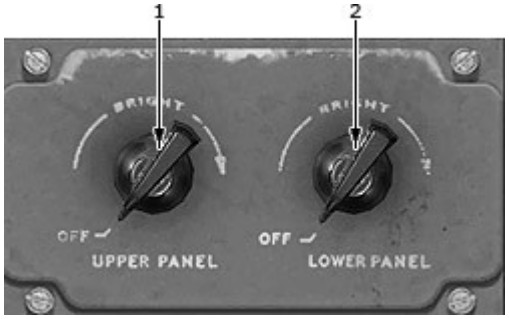
3. Service Interphone Switch

ON: connects ground service locations to interphone system.

4. Flight Recorder Master Switch

ON or TEST: Bypasses oleo relay on the ground.

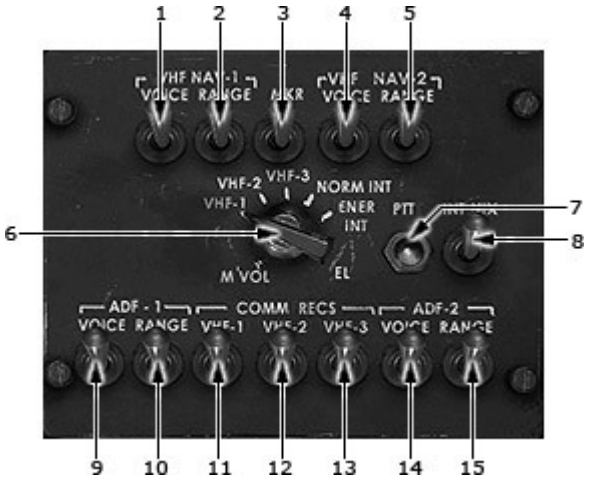
S08. LIGHTS CONTROL PANEL



1. Upper Panel Background Lights Control Switch

2. Lower Panel Background Lights Control Switch

S12. AUDIO SELECTOR PANEL



1-5, 9-15. Communication Receiver Switches

6. Transmitter Selector

7. Microphone Push-to-talk Switch

8. Mic Selector Switch

1-5, 9-15. Communication Receiver Switches

Switches on each audio selector panel are used to connect audio from a selected facility to the associated crew member's headphones (or loudspeaker at the Captain's, F/O's stations).

Any one or any combination of audio facilities can be monitored by moving the appropriate switches to the UP position, provided the emergency audio switch is in NORM position.

6. Transmitter Selector

Selects desired transmitter.

7. Microphone Push-to-talk Switch

Press to transmit through oxygen mask or boom microphone.

FAILURES

The 707 Captain supports the following failures:

INSTRUMENTS

- Airspeed Indicator failure
- Altimeter failure
- Vertical Speed Indicator failure

SYSTEMS

- Brake Hydraulic Source failure
- Center Gear failure
- Electrical failure
- Fuel Leak failure
- Generator (Eng 1-4) failure
- Hydraulic Leak Reservoir 1-4 failure
- Hydraulic Pump (Eng 2,3) failure
- Hydraulic Pump Elec 1,2 failure
- Left Brake failure
- Left Gear failure
- Pitot Tube failure
- Right Brake failure
- Right Gear failure
- Static Port failure

RADIOS

- ADF1/ADF2 failure
- COM1/COM2 failure
- NAV1/NAV2 failure

ENGINES

- Complete Failure (Eng 1-4)
- Fire (Eng 1-4) - работает(?)
- Ignition failure (Eng 1-4)
- Oil Leak (Eng 1-4)
- Oil System failure (Eng 1-4)

CONTROLS

- Elevator failure
- Left/Right Aileron failure
- Left/Right Flap failure
- Rudder failure

To set up the failures go FSX menu Aircraft>Failures.

CUSTOMER CARE

FORUM

You are invited to join Captain Sim community forum

DAILY NEWS

For Captain Sim *daily* news please follow us at Twitter or Facebook.

VIDEO CHANNEL

For Captain Sim videos please watch our YouTube channel.

TECH SUPPORT

The '707 Captain' is the most advanced, complete and accurate digital replica of the B707 ever available for any game platform.

Our product is not perfect (unfortunately nothing is). But we are working on improvements. If you have some important issue to report, please check-in to Your Profile then click Product Name > Customer Support > and use the Trouble Ticket System. We process all tickets and consider the most significant issues for the next service packs.