



# **Boeing 747-8F**

## **FSX Flight Deck Panel**

### **Version 1.0**

# **Documentation**

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# Boeing 747-8F Panel

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# Boeing 747-8F Panel

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## INSTALLATION

If you are reading this you have already unzipped the ZIP file.

To install this panel on any aircraft copy the \panel subdirectory to the \FSX\Simobjects\Aircraft\B747-8 folder preferably renaming it to something like \panel.xx so that you do not overwrite the existing panel.

Change the panel= in the aircraft.cfg to panel=xx to access the new panel.

This panel has been developed on the only Boeing 747-8F model available developed by Opensky. The model has a number of problems including constant consumption of memory leading to slower and slower execution until system failure.

Ensure that you change the aircraft.cfg is changed as detailed later to ensure this panel works correctly.

This panel is specifically for the 8F model of Boeing 747-8 however the only real difference is in the air conditioning overhead panel which is a dummy panel in FSX anyway. The panel is very similar to the Boeing 747-400 with only minor difference such as buttons instead of knobs being used in some places on the overhead. So this panel could be used in a Boeing 747-400 model as well.

Note that the VC is pure Boeing 747-400 and many functions available on the 2D panel are not present on the VC – e.g. VNAV.

### ***Aircraft.cfg Changes***

Corrections to the aircraft.cfg can be done with Notepad in the sections detailed below:

#### **[Fuel]**

For any aircraft it is essential for the **number\_of\_tank\_selectors** under this section to equal 4 for the fuel system to work.

**electric\_pump** should equal 4

To use the fuel jettison system **fuel\_dump\_rate=** must be shown under [Fuel]. A realistic rate is 0.000095 which roughly yields a dump rate of 2000 kilograms per minute. This can take a very long time so if you want to dump fuel in a few minutes a commonly recommended rate is 0.0167.

#### **[Autopilot]**

It is recommended to set **default\_vertical\_speed=** to 1800 rather than 0 as in the Opensky model.

# Boeing 747-8F Panel

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## **[Radios]**

The Boeing 747-8F does not use ADFs so it is not essential to have an entry for Adf.1=1 however you may wish to do use for use by the GPS or FMC. You may also add Adf.2=1 if you would like two ADFs on these gauges.

## **[deice\_system]**

For Wing de-icing to work the parameter **structural\_deice\_type** should be 1. This parameter can be deleted from the [Pneumatic\_system] if present.

## **[Exits]**

The Opensky model has entries which allow Jetways to work however it does not align correctly to the main exit. Change the exit.0 entry to the following:

```
exit.0 = 0.12, -11, -11, 9, 0
```

Scenery Complexity in FSX needs to be set to “Dense” or greater for Jetways to be visible.

## **[hydraulic\_system]**

Ensure **electric\_pumps** is equal to 4.

## ***Mouse Controls***

Mouse controls on this panel use all the mouse buttons. For dial switches use the left and right mouse to move anti-clockwise or clockwise. Vertical dials like the Vertical Speed dial use the mouse wheel. Left click on switches or buttons for on / off. The Throttle Quadrant takes this system a step further – see the Throttle Quadrant section for details on how to operate the throttle quadrant.

## ***When all else fails read the Instructions***

If you carry out the above steps you should have the panel working easily. Even if you do not do the changes to the aircraft.cfg it will still work – only some peripheral functions will not work correctly.

The instructions which follow may seem daunting however they make it possible to find out what every button and switch is for. It is not necessary to know all of the functions but it can be interesting to experiment with the various switches and synoptic displays and learn more about the operation of this large aircraft. Everything has been carefully done to follow the real aircraft as closely as possible – albeit in a simplified manner.

# Boeing 747-8F Panel

## INSTRUCTIONS

### *Introduction*

Although this is a panel for the Boeing 747-8F the changes from the Boeing 747-400 are quite small. A few knobs have been changed to buttons but the controls remain essentially the same.

A new approach has been taken to the main 2D panel and it displays the full panel for both Captain and First Officer. It is designed for panels 1920X1080 and will not work well on smaller panels. The drawback with this approach is that the text appearing on the gauges is very small although still legible. The text is more legible on the VC.

The VC however is pure Boeing 747-400 and is restricted in its functionality. Many functions such as VNAV and most functions on the overhead can not be done on the VC.

V Speeds were not available for the Boeing 747-8F so the V speeds for the Boeing 747-400F (Model 570) have been used. These are probably not correct for the Boeing 747-8F but are all that is available.

This panel was developed on FSX Acceleration edition and designed around the Opensky Boeing 747-8F specifically for **1920X1080** screens. It will not work on FS9.

**WARNING:** The Opensky Boeing 747-8F model has many errors built-in which can cause system crashes and corruption of FSX. These problems are NOT caused by the panel.

### *Night Lights*



# Boeing 747-8F Panel

During night operations the white backlighting as on the real aircraft can be switched on. They can be switched on with the three lighting switches at the bottom left of the overhead panel: the CKT BKR OVHD PANEL switch for the overhead lights, the GLARESHIELD PANEL/LOGO Switch for the Glareshield and the AISLE STAND PANEL/LOGO Switch for the main panel. The standard FSX night lights can be switched on with the STORM switch.

## Icons



These are the standard icons at the top left of the main panel with an additional “Compass” icon. Clicking on this icon will display the Compass at the top of the screen together with the bottom row of lighting switches from the Overhead panel.

## Main Panel



**Main Panel**

The main features of the main panel are the six CRT screens: the first displaying the Primary Flight Display (PFD); the second switches between MFD, PFD and EICAS with MFD the normal, the third is the EICAS panel, fourth is the First Officer’s MFD, the fifth is the First Officer’s PFD and the sixth displays the secondary engine indications by default.

The second, fourth, and sixth screens can be switched to display 11 different screens selected by the Display Select Panel to the right of the autopilot.

The EFIS Panel at the top left of the Glareshield controls the Captain’s PFD and MFD while the EFIS panel on the First Officer’s side controls the displays on that side.

# Boeing 747-8F Panel

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## The Hydraulic Brake Pressure Gauge



The Hydraulic Brake pressure gauge as expected displays the Hydraulic Brake Pressure in thousands of psi.

## The Master Caution and Warning Lights



The Master Caution and Warning lights have two lights to signal non-normal configuration or emergencies. As there can be a large number of causes for these lights to illuminate further investigation is needed from the EICAS messages.

These lights come on in the following cases:

- WARNING: - any Red ALERT message on the EICAS
- CAUTION: - any Yellow CAUTION message on the EICAS

Clicking on the Master Warning button stops them flashing.

See the EICAS section below for more information on EICAS messages.

## The EFIS



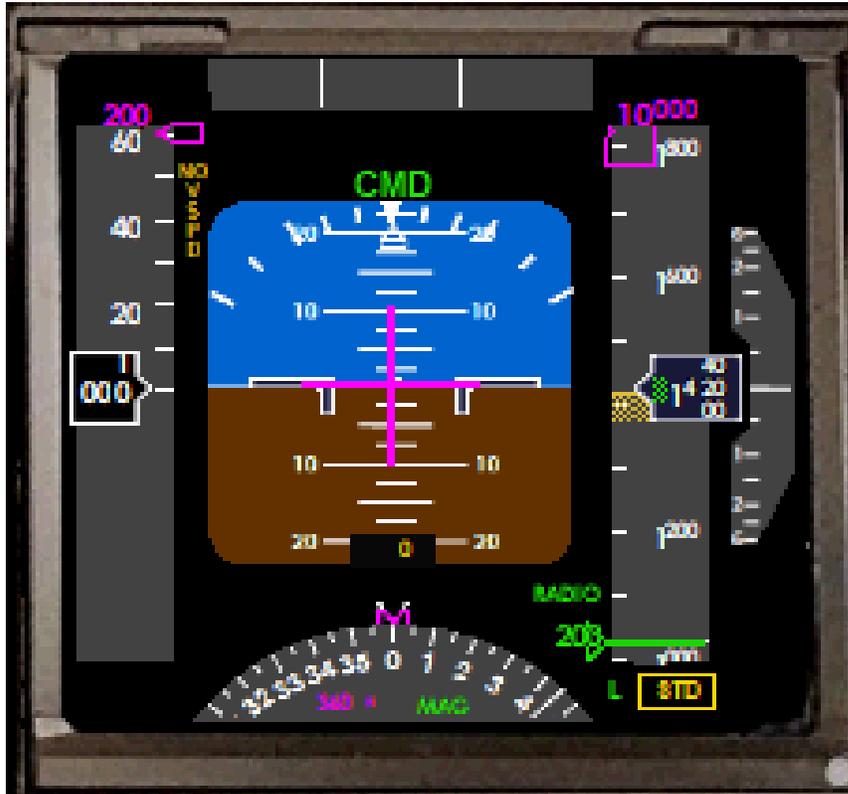
These two panels control the settings in the MFD display on the Captain's and First Officers side respectively.

# Boeing 747-8F Panel

<b>EFIS</b>		
<b>Switch</b>	<b>Function</b>	<b>Action</b>
<b>RST Dial</b>	Increases or decreases the Decision Height for landing. This can be seen in the PFD and will be reflected in the Callouts during Approach. Centre click switches between Barometric and Radio Altitudes.	Left click decrease or right click to increase the Decision Height. Limits are 0 and 360 feet. Centre click to switch between Barometric and Radio Altitude for Decision Height.
Left VOR Switch	Switches between VOR 1 or no display in the bottom left of the MFD	Left click to switch down and right click to switch up.
CTR Dial	Select between Approach, VOR, Map, or Plan for display on the VOR. Boeing recommends usually leaving on Map for best detail. Use the Centre click to switch the MFD between Expanded and Rose display.	Left click to move anti-clockwise or right click for clockwise. Centre click to select Rose display on the MFD.
TFC Dial	Alters the range on the MFD from 10 to 640 nautical miles.	Left click to move anti-clockwise or right click for clockwise.
STD Dial	Increases or decreases the barometric pressure and switches between Millibars and Inches of Mercury (IN) on the PFD and on the Standby Altimeter.	Left click to move anti-clockwise or right click for clockwise. Centre click to switch between inHg and Mb.
Right VOR Switch	Switches between VOR 2 or no display in bottom right of the MFD	Left click to switch down and right click to switch up.
WXR	The WXR button is to switch on the weather radar in the real aircraft. As FSX does not support weather radar this button switches on the TAWS map.	Click to switch on the TAWS map. (See below for more detail).
STA	Displays or suppresses NDBs and VORs on the MFD.	Click once to display and again to suppress the NDBs and VORs
WPT	Display Waypoints on the MFD	Click once to display Waypoints and again to suppress them.
ARPT	Display Airports on the MFD	On by default, Click once to suppress airports and again to display them.
DATA	Display additional information on the MFD – e.g. Airport names and IFR landing displays.	Press once for additional detail and again to suppress the detail.
POS	Displays a monochrome map on the MFD	Press once for the map and again to suppress the map.
TERR	Displays terrain in colour with colours depicting altitude of the terrain.	Press once to see terrain and again to suppress.

# Boeing 747-8F Panel

## The Primary Flight Display (PFD)



The PFD displays all information about the orientation of the aircraft including Heading, Speed, Attitude, rate of climb, as well as substantially more information. This is a close replica of the appearance of the PFD on the real aircraft. The first and fifth panels always show the PFD.

Note that the PFD Radio Altimeter measures altitude from its antenna to the ground but should display altitude with wheels down from its wheels to the ground. The panel will automatically apply a correction if it is started with aircraft on the ground or will apply a factor of 17 feet (the altitude of the antenna from the ground when the aircraft is on the ground).

# Boeing 747-8F Panel

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## The MFD Panel



### Expanded MFD with Monochrome Map

The ND or Navigational Display (usually referred to as the MFD) always displays by default on the left and right inboard CRTs. It can also appear on the sixth screen on the pedestal. Each screen is controlled by the corresponding EFIS with the display on the For VORs controlled by the Captain's EFIS.

Clicking on the centre of the MFD or Centre click on the CTR button on the EFIS panel will switch between Expanded and Rose displays.

For VORs "NS" appears when there is no signal. This is to prevent confusion when the VOR has been tuned but not detected.

The symbols for the TCAS radar have been made aircraft symbols to clarify their meaning for a non-pilot.

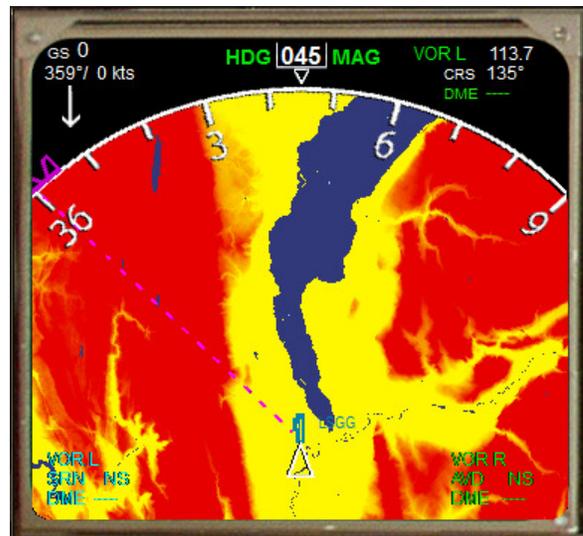
The colouring for the Terrain map to give it more contrast is based on Garmin colouring and Map shadowing (see below). On the real aircraft the terrain map is actually a TAWS map but this map is included as well as the TAWS map as it would be more familiar to the FSX user.

# Boeing 747-8F Panel

## The TAWS Map



**Expanded Terrain Map**



**Expanded TAWS Map**

The Terrain Awareness (TAWS) Map is a map which measures terrain altitudes from the height of the aircraft rather than from sea level. The system used on this aircraft follows the colour scheme specified for a Boeing 737-800 however does not have the same accuracy as colours can only be defined in FSX per 1000 feet instead of 250 feet as needed by the specification.

This TAWS map shows terrain from 2000 feet below the aircraft to 1000 feet below the aircraft in Green, from 1000 feet below to 2000 above the aircraft as Yellow, and Terrain more than 2000 feet above the aircraft as Red. Other terrain is not shown. The map above is what you see if the aircraft is on the ground. The specification states that the Green should extend to 500 feet below the aircraft (or 250 feet if gear extended) and the Yellow above that.

Note that this TAWS map does not support look ahead terrain as this is not modelled in FSX.

# Boeing 747-8F Panel

## The Autopilot



This is a fairly standard Boeing Autopilot. Buttons and their functions from left to right are:

AUTOPILOT		
Switch	Function	Action
F/D ON	Switches the Flight Director on or Off	Click up for On and down for Off.
A/T ARM	Arms the Autothrottle before activating.	Click up for on and down for off.
THR	When the aircraft is more than 400 feet above ground this switch sets constant N1 to the current level.	Click for On or Off.
SPD	Engage or disengage Autothrottle to maintain speed shown in the IAS window.	Click once to engage and once to disengage. Note that if this is on it will hold the Speed or the Mach depending on the setting in the IAS/Mach Window
SEL Button	Switches IAS window from Speed display to Mach number display.	Click once to switch from one to the other. Does not function if the speed is below Mach 0.4.
IAS / MACH WINDOW	Display the desired Indicated Air Speed (IAS) or the Mach Number depending on the setting of the SEL Switch.	Left click to decrease the desired speed or right click to decrease.
IAS Dial	Adjusts the speed shown in the IAS / MACH Window.	Left click to decrease the desired speed or right click to decrease.
LNAV Button	Engages or disengages navigation mode. When engaged the aircraft will fly along the flight path already entered in the flight plan. Note that this button also automatically connects or disconnects NAV1 to the GPS navigation.	Click once to engage and again to disengage.
VNAV Button	This button links to the FMC and activates VNAV mode according to the settings in the FMC. When disengaged the aircraft will maintain the current selected altitude.	Click once to engage and again to disengage.

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<b>AUTOPILOT (continued)</b>		
<b>Switch</b>	<b>Function</b>	<b>Action</b>
FLCH Button	Engaging FLCH (Flight Level Change) will change the selected speed to the current speed if the current speed is greater than the currently selected speed.	Click once to change selected speed.
Heading Window	Displays the selected Heading in Degrees (1 to 360).	Right click to move the desired Heading to the right or left click to move left.
Bank Limit Dial	Indicates the selected bank limit. The default and maximum is 25 degrees.	Right click to move the desired Heading to the right or left click to move left. Use the Mouse wheel to change the max bank angle.
Heading Hold Button	Activate or deactivate the Autopilot Heading Hold function which will turn the aircraft to the magnetic heading selected in the Heading window.	Click once to engage and again to disengage.
V/S Window	Displays the Vertical Speed of the aircraft in plus or minus feet per minute. The default is set in the aircraft.cfg and is recommended to be 1800 feet per minute	None
V/S Dial	Dial up or down to increase or decrease the Vertical speed.	Use the Mouse wheel to move the dial up or down.
V/S Button	Activates or deactivates the Autopilot Vertical speed hold function.	Automatically selected by Altitude Hold function.
Altitude Window	Displays the Autopilot selected altitude in feet.	Right click to increase the desired Altitude or left click to decrease.
Altitude Hold Button	Activates or deactivates the Autopilot Altitude hold function.	Click once to engage and again to disengage.
LOC Button	When activated the aircraft will fly to the Localiser selected by NAV1 radio but will NOT follow the glideslope.	Click once to engage and again to disengage.
APP Button	When activated the aircraft will fly to the Localiser selected by NAV1 radio then will follow the Approach glideslope.	Click once to engage and again to disengage.

# Boeing 747-8F Panel

AUTOPILOT (continued)		
Switch	Function	Action
A/P	Autopilot Master Switch. Green bar when on.	Click to turn on Autopilot. Click to turn off Autopilot. Does not turn Autothrottle on or off. Note that clicking on any of the 3 switches will turn on all. This is different to the real aircraft where only one is on however this is easier to understand for the FSX user.
A/P DISENGAGE	Clicking on this will disconnect both Autopilot and Autothrottle. They are then barred from being reconnected as long as the diagonal yellow lines are visible. This button must be clicked again to allow reconnection.	Click once to disconnect Autopilot and Autothrottle. Click again to allow reconnection.
F/D ON	Switches the Flight Director on or Off	Click up for On and down for Off. Duplicate of switch on the left.

## The Inboard Display Switches Panel

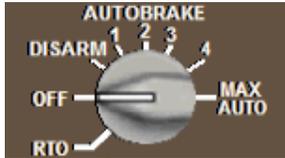


The INBOARD DSPL Knob is used to change the display in the MFD panel to EICAS. In a real aircraft the EICAS is displayed in the MFD CRT if the primary EICAS display has failed however this has little utility in a simulation. The same panel also appears on the First Officer's side.

# Boeing 747-8F Panel

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## The Autobrake Switch



The Autobrake dial sets Autobrakes for either landing or Takeoff and operates in the following way:

**For Takeoff:** Autobrake button should be set to RTO

When set to RTO on takeoff, if the Throttle levers are set to idle at over 85 knots the spoilers, reversers, and brakes will automatically fully deploy. After takeoff Autobrake automatically resets to off.

**For Landing:** Autobrake can be set to 1, 2, 3, 4, or Max

When Autobrake is set, on touching the ground the Autothrottle disengages, Spoilers fully deploy, and reversers and brakes engage to varying degrees up to maximum. Spoilers, reversers, and brakes automatically close when speed falls to 30 knots.

The Autobrake dial is operated using the left and right mouse buttons to rotate the dial.

The above system is different to the standard FSX system which brings the aircraft to a complete stop before disengaging. Normally the pilot does not wish to completely stop the aircraft.

## The Display Select Panel



This panel controls the displays appearing in the left and right inboard CRTs and the centre CRT on the Pedestal. Note that this panel does not work in the VC.

A detailed description of each panel is shown in the following CRT Display Panels section.

# Boeing 747-8F Panel

The following table details the selections that can be made in the Display Select panel:

<b>BUTTONS</b>		
<b>Switch</b>	<b>Function</b>	<b>Action</b>
L INBD	Selects the left Inboard CRT	Click to select
LWR CTR	Selects the Secondary Engine Indicator CRT on the Pedestal	Click to select
R INBD	Selects the right Inboard CRT	Click to select
ENG	Displays the EICAS Panel.	Click to display the EICAS panel.
STAT	Displays the Status sub-Panel if the EICAS panel is selected.	Click to display the Status panel.
ELEC	Displays the Electrical Panel.	Click to display the Electrical panel.
FUEL	Displays the Fuel Panel.	Click to display the Fuel panel.
ECS	Displays the Compressed Air and Cabin Temperatures Panel.	Click to display the Compressed Air and Cabin Temperatures panel.
FCTL	Displays the Flight Controls Panel	Click to display the Flight Controls Panel
HYD	Displays the Hydraulics Panel.	Click to display the Hydraulics panel.
DRS	Displays the Exits Open/Closed Panel.	Click to display the Exits Open/Closed panel.
GEAR	Displays the Landing Gear Panel.	Click to display the Landing Gear panel.
INFO	Displays a blank screen as no information available about this display.	Click to display blank screen.
CHKL	Displays the Checklists Menu	Click to display the main checklists menu.
NAV	Displays the MFD	Click to display the MFD
CNC / RCL	Suppresses or recalls the messages display on the EICAS Panel or goes to next page if there are multiple pages.	Click to suppress or recall the display of messages on the EICAS Panel.

## **The Standby PFD**



The Standby PFD provides the Attitude, Speed, and Altitude all in one gauge.

On the VC three separate gauges are displayed as the VC is purely a Boeing 747-400.

# Boeing 747-8F Panel

## The EICAS and True Heading Switches



The two knobs on this panel are dummy knobs however the HDG TRUE switch switches the PFD and MFD displays to True heading from the normal Magnetic Heading. It does not however change the selected heading which is always Magnetic.

## The Landing Gear Panel



The Landing Gear Panel is a fairly good replica of the Landing Gear panel in the original aircraft. The switches function but have no effect on the simulation. The only functioning item on this panel is the Gear Lever which can be clicked on to raise or lower the Landing Gear.

The Autobrake dial sets Autobrakes for either landing or Takeoff and operates in the following way:

**For Takeoff:** Autobrake button should be set to RTO

When set to RTO on takeoff, if the Throttle levers are set to idle at over 85 knots the spoilers, reversers, and brakes will automatically fully deploy. After takeoff Autobrake automatically resets to off.

**For Landing:** Autobrake can be set to 1, 2, 3, 4, or Max

When Autobrake is set, on touching the ground the Autothrottle disengages, Spoilers fully deploy, and reversers and brakes engage to varying degrees up to maximum. Spoilers, reversers, and brakes automatically close when speed falls to 30 knots.

The Autobrake dial is operated using the left and right mouse buttons to rotate the dial.

The above system is different to the standard FSX system which brings the aircraft to a complete stop before disengaging. Normally the pilot does not wish to completely stop the aircraft.

# Boeing 747-8F Panel

## **CRT Display Panels**

There are 8 different Panels that can be selected to display in either of 2 CRTs as described earlier under the Display Select Panel. Several of these panels are linked to panels on the overhead display. These displays are called “Synoptic Displays” by Boeing.

## **The EICAS Panel**



The EICAS Panel always appears by default in the Centre CRT and can be selected by clicking the ENG button on the Buttons panel for the two inboard displays or the Pedestal display. The EICAS panel can also be displayed on the inboard CRT by selecting EICAS on the respective INBOARD CRT Switch.

# Boeing 747-8F Panel

## The Secondary EICAS Panel



The secondary EICAS panel is displayed by default on the Pedestal CRT. It can also be displayed by clicking anywhere on the EICAS panel in any other screen.

Both EICAS Panels display detailed information on the engines and also a list of messages in the top right hand corner. These messages can be suppressed by clicking on the CNC / RCL button on the Display Select Panel and recalled again by pressing the CNC / RCL button again.

The EICAS also displays the Landing Gear status and the Flaps settings. Note that when Flaps are set to Up the Flaps indicator does not appear.

# Boeing 747-8F Panel

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## **EICAS Messages**

There is an extensive library of possible messages which can appear on the EICAS which are listed below. All of the messages follow the specifications in the Boeing Operations Manual but only a subset of messages are available as many messages are for functions not supported in FSX. Messages are prioritised as follows with the highest priority appearing first:

### **WARNING (Red):**

The highest priority: reporting an abnormal condition which is a threat to the safety of the aircraft and requiring immediate attention. These messages can not be cancelled by the CNC / RCL button.

### **ALERT (Yellow):**

- **Caution** Messages are the next highest priority after Warning messages. They can be cancelled or recalled by pressing the CNC / RCL button.
- **Advisory** Messages are the lowest priority alert messages and are indented one space to indicate their lower priority. They can be cancelled or recalled by pressing the CNC / RCL button.

### **MEMO (White):**

Reminder messages of the state of controls or systems. They can not be cancelled by pressing the CNC / RCL button.

Boeing specifies an additional category of Communication messages however these are not supported in this panel.

Note that some messages are accompanied by aural warnings.

# Boeing 747-8F Panel

The table following lists the messages that can be seen in this panel.

<b>EICAS MESSAGES</b>		
<b>Message</b>	<b>Level</b>	<b>Message Logic</b>
<b>WARNING</b>		
CABIN ALTITUDE	Warning	Cabin Altitude is greater than 10000 feet
>AUTOPILOT DISC	Warning	The Autopilot is disconnected in the air
FIRE APU	Warning	Fire in APU
FIRE MAIN DECK	Warning	Main Deck Fire Bottle is armed
FIRE CARGO FWD	Warning	Forward Cargo Fire Bottle is armed
FIRE CARGO AFT	Warning	Aft Cargo Fire Bottle is armed
FIRE ENG 1, 2, 3, or 4	Warning	Fire in Engine
>TEST IN PROG	Warning	The Fire Test button has been pressed
>CONFIG FLAPS	Warning	Aircraft on ground; and Throttles at Takeoff Power; and Flaps not set to Takeoff Configuration
>CONFIG GEAR	Warning	Altitude above ground below 800 feet with throttles idle and gear not fully extended
>CONFIG PARK BRK	Warning	Aircraft on ground; and Throttles at Takeoff Power; and Parking brake is on
>CONFIG SPOILERS	Warning	Takeoff Power applied; and Spoilers Deployed
>CONFIG STAB	Warning	Aircraft is on the ground and Airspeed is less than V1 and 3 or more fuel control switches in RUN and Engines 2 and 3 in takeoff range and Stabilizer not within green band
>OVERSPEED	Warning	Airspeed is greater than VMO/MMO

# Boeing 747-8F Panel

EICAS MESSAGES (continued)		
Message	Level	Message Logic
<b>CAUTION</b>		
DOOR AFT CARGO	Caution	Aft Cargo Door is open
DOOR FWD CARGO	Caution	Forward Cargo door is open
DOOR NOSE CARGO	Caution	Nose Door is Open
>AUTOTHROT DISC	Caution	Aircraft is airborne and Autothrottle not armed
>ELEC AC BUS 1,2,3,4	Caution	AC Bus is unpowered
ENG 1,2,3,4 FAIL	Caution	Aircraft is airborne and Engine is shutdown
ENG 1,2,3,4 LIM PROTECT	Caution	Engine N1 is greater than 100%
ENG 1,2,3,4 SHUTDOWN	Caution	Engine fuel valve is in CUTOFF
FLAPS PRIMARY	Caution	Alternate Flaps are armed
>SPEEDBRAKES EXT	Caution	Spoilers are deployed and: Aircraft less than 800 feet above ground; or Flaps more than 15 degrees extended; or Throttle levers are idle
FUEL PRESS ENG 1,2,3,4	Caution	Fuel pressure below 5 psi
FUEL QTY LOW	Caution	Fuel less than 10% in any main tank.
HYD PRESS SYS 1,2,3,4	Caution	Hydraulic Pressure less than 100 psi
BRAKE SOURCE	Caution	Brake Hydraulic Pressure less than 100 psi
DOOR SIDE CARGO	Caution	Main Deck side Cargo door is open (Not 109)

# Boeing 747-8F Panel

EICAS MESSAGES (continued)		
Message	Level	Message Logic
<b>ADVISORY</b>		
DOOR BULK CARGO	Advisory	The Bulk Cargo door is open.
DOOR ELEC CTR	Advisory	The Central Electrics Door is open
DOOR ELEC MAIN	Advisory	The Main Electrics Door is open
DOOR ENTRY L1	Advisory	The main entry door is open
DOOR ENTRY L5	Advisory	Entry Door 5 is open
DOOR F/D OVHD	Advisory	Flight Deck Overhead Door is open
DOOR R UPPER DK	Advisory	Right Upper deck door is open
DOOR SIDE CARGO	Advisory	Lower Deck Cargo Door is open
DOORS ELEC	Advisory	Both Electrics doors are open
SUPRNMRY OXY ON	Advisory	Supernumerary Oxygen masks deployed
BLEED 1,2,3,4 OFF	Advisory	The Engine Bleed Air switch is off
LANDING ALTITUDE	Advisory	Landing Altitude is manual
OUTFLOW VLV L,R	Advisory	Pressurisation Outflow valve is open
TRIM AIR L,R OFF	Advisory	The Trim Air switch is off
>ANTI-ICE	Advisory	Both Engine anti-ice switches are on
HEAT WINDOW L,R	Advisory	Window Heat Off
>ICING	Advisory	Wing icing greater than 1%
>BAT DISCH MAIN	Advisory	Battery is discharging
>BATTERY OFF	Advisory	The Master Battery is off

# Boeing 747-8F Panel

EICAS MESSAGES (continued)		
Message	Level	Message Logic
>DRIVE DISC 1,2,3,4	Advisory	The Generator Drive disconnect switch has been pressed and IDG is disconnected.
ELEC BUS ISLN 1,2,3,4	Advisory	The Electrical Bus Tie switch is off
ELEC GEN OFF 1,2,3,4	Advisory	The Electrical Generator is off
ELEC UTIL BUS L,R	Advisory	One or more Utility buses are unpowered
STBY POWER OFF	Advisory	Standby Power switch is set to Off
ENG 1,2,3,4 EEC MODE	Advisory	Engine is in EEC Mode
ENG 1,2,3,4 OIL PRESS	Advisory	Oil pressure is less than 5 psi
ENG 1,2,3,4 OIL TEMP	Advisory	Oil Temperature is greater than 155 degrees C
ENG 1,2,3,4 RPM LIM	Advisory	N2 is greater than 100%
YAW DAMPER LWR,UPR	Advisory	Yaw Damper is not on
FUEL IMBAL 1-4	Advisory	Fuel imbalance between tanks wing tanks differs by more than 3000 gallons
FUEL IMBAL 2-3	Advisory	Fuel imbalance between main tanks differs by more than 6000 gallons
FUEL IMBALANCE	Advisory	Total fuel imbalance of more than 6000 gallons
FUEL LOW CTR L,R	Advisory	Centre tank < 17000 pounds before start with pump switches ON or Centre tank < 7000 pounds in climb with pump switches ON or Centre tank < 3000 pounds in cruise with pump switches ON
FUEL OVD CTR L,R	Advisory	Centre tank < 17000 pounds before start with pump switches OFF or Centre tank < 7000 pounds in climb with pump switches OFF or Centre tank < 3000 pounds in cruise with pump switches OFF
>FUEL PMP STB L,R	Advisory	Aircraft on Ground and Stabiliser tank pump on; or Aircraft in air; and Fuel in Stabiliser tank > 500 kgs; and Stabiliser tank pump off.
FUEL PUMP 1,2,3,4 FWD,AFT	Advisory	Fuel pressure < 5 psi
FUEL TANK/ENG	Advisory	Main tank 2 <= Main tank 1 or Main tank 3 <= main tank 4 and Cross feed valve 1 or 4 open

# Boeing 747-8F Panel

<b>EICAS MESSAGES (continued)</b>		
<b>Message</b>	<b>Level</b>	<b>Message Logic</b>
FUEL TEMP LOW	Advisory	Fuel Temperature less than -37 degrees C
JETT NOZ ON L,R	Advisory	Fuel Jettison Nozzle is on
HYD PRESS DEM 1,2,3,4	Advisory	Hydraulic Demand pump switched off
HYD PRESS ENG 1,2,3,4	Advisory	Engine Hydraulic pump switched off
HYD QTY LOW 1,2,3,4	Advisory	Hydraulic Fluid quantity less than 10%
ANTISKID OFF	Advisory	Antiskid Brakes are off
AUTOBRAKES	Advisory	Autobrakes are Off
TCAS OFF	Advisory	TCAS is switched off
AIRSPEED LOW	Advisory	Airspeed below minimum
AUTOPILOT ON	Advisory	Autopilot is on
<b>MEMO</b>		
PACK 1,2,3 OFF	Memo	The Pack is switched off
PACKS OFF	Memo	All Packs are switched off
APU RUNNING	Memo	The APU is on
SPEEDBRAKE ARMED	Memo	Speedbrake is armed.
IRS ALIGN MODE L,C,R	Memo	IRS is in alignment mode
AUTOBRAKES RTO, 1, 2, 3, 4, MAX	Memo	Autobrakes are at the displayed setting
PARK BRAKE SET	Memo	Parking Brake is on
UNLIMITED FUEL	Memo	In FSX Unlimited Fuel has been set.

# Boeing 747-8F Panel

## The Status Panel

The Boeing Manual indicates that this panel is blank except for the list of status messages.

The status messages on this panel are a permanent display of messages describing failures and events during the flight. Unlike the EICAS these messages do not disappear when the condition no longer exists – e.g. if an engine fire is extinguished the FIRE message will disappear from the EICAS but remain on the status panel. On the real aircraft there is a large range of messages describing minor failures not available in FSX (e.g. LAV-GALLEY FAN R). In FSX this panel only shows messages for failures supported by FSX so the screen is often empty and the messages themselves are FSX rather than Boeing messages.

It will usually show “HYDRAULICS REDUCED” on startup as the hydraulic pressure initialises at zero.

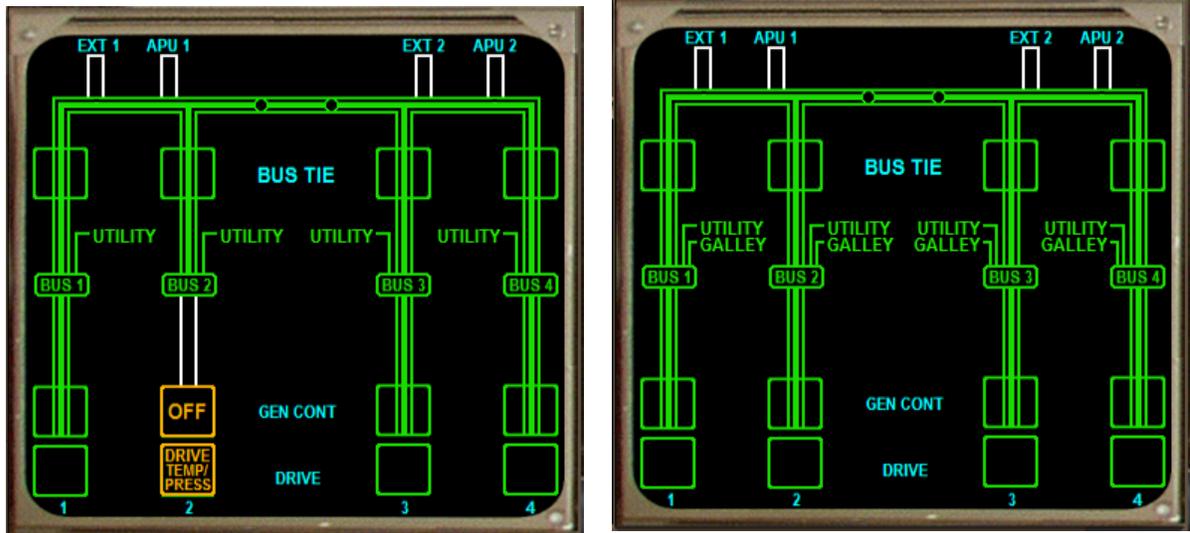
An additional FSX message “UNLIMITED FUEL” has been added when FSX is set to unlimited fuel to indicate that fuel displays are meaningless. This message also appears as a Memo message in EICAS.

A list of possible messages on this panel follows.

STATUS MESSAGES	
Message	Message Logic
FIRE ENGINE 1, 2, 3, 4	Fire in Engine
FIRE APU	Fire in APU
UNLIMITED FUEL	FSX is set to Unlimited Fuel
OIL LEAK ENGINE 1, 2, 3, 4	Oil leak in Engine
DAMAGE ENGINE 1, 2, 3, 4	Damaged Engine
FAILED ENGINE 1, 2, 3, 4	Engine Failure
FAILED AIRSPEED	Airspeed measurement failed
FAILED ALTIMETER	Altitude measurement failed
FAILED ATTITUDE	Attitude measurement failed
FAILED COMMS	Communications Radio Failed
FAILED COMPASS	Auto compass failed
FAILED ELECTRICAL	Electrical System failed
FAILED AVIONICS	Avionics systems failed
FAILED HEADING	Heading measurement failed
FAILED TRANSPONDER	Transponder failed
FAILED NAV	NAV Radio failed
FAILED PITOT	Pitot measurement failed
DAMAGE FLAPS	Flaps damaged by speed
DAMAGE GEAR	Landing Gear damaged by speed
HYDRAULICS REDUCED	Hydraulics pressure low
HYDRAULIC QTY LOW ENGINE 1,2,3,4	Hydraulic Quantity Low
OXYGEN MASKS DEPLOYED	Oxygen Masks have been deployed

# Boeing 747-8F Panel

## The Electrical Panel



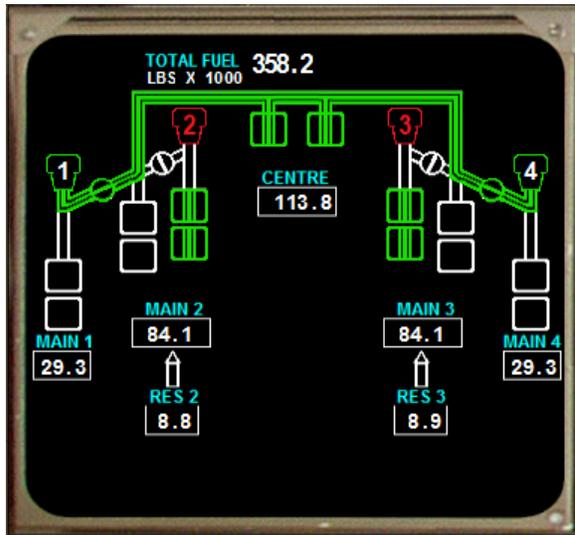
**Electrical Synoptic**

The Electrical Panel diagrammatically displays the settings on the Electrical Switch Panel on the left of the Overhead Panel. Changes to the switches on this Overhead panel will result in changes to the diagram. Note that to start the APU, the APU Switch is clicked to START followed by switching on the APU GEN switch. The DRIVE will be off if the engine is not running.

This diagram is similar to the Boeing diagram.

# Boeing 747-8F Panel

## The Fuel Panel



**Fuel Synoptic**

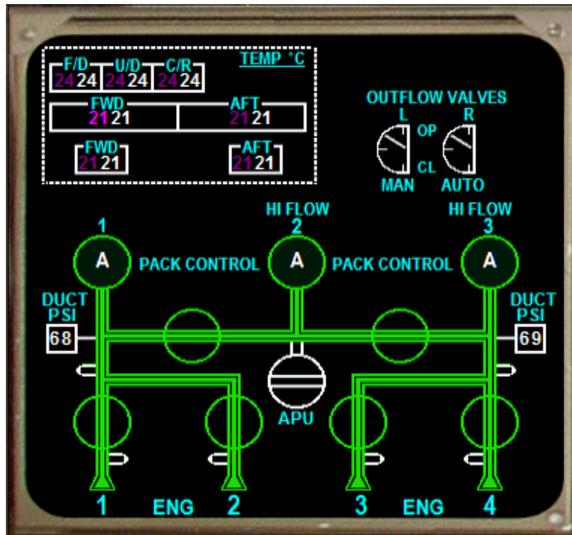
The Fuel Panel diagrammatically displays the settings on the Fuel Switch Panel on the Overhead Panel. Changes to the switches on this Overhead panel will result in changes to the diagram. The diagram shows fuel available in each of the tanks together with the selected fuel flow. The engines appear red when off and Green when running. Note that to start the APU, the APU Switch is clicked to START followed by switching on the APU GEN switch.

This diagram correctly reflects the Automated Fuel Management System which is described in a later section and which is based on the Boeing system.

This diagram is very similar to the Boeing diagram apart from the colour change in the engines.

# Boeing 747-8F Panel

## The ECS Panel



**ECS Synoptic**

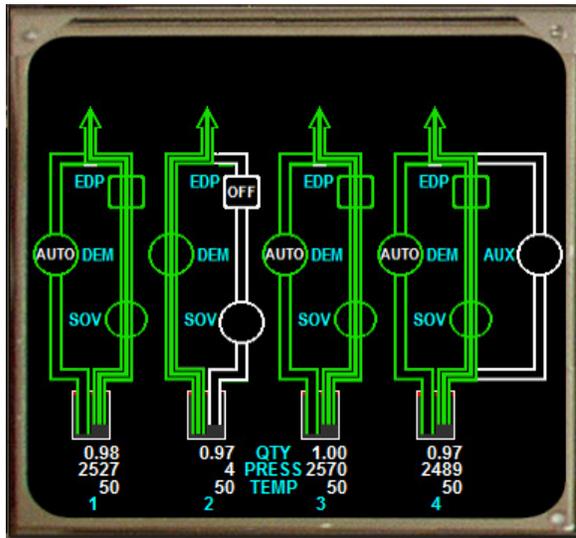
The ECS Panel diagrammatically displays the settings on the two Air Pressure Panels in the top right of the Overhead Panel. Note that the display of temperatures in the top left screen is different for each model of aircraft but the flow diagram remains the same. Changes to the switches on these Overhead panels will result in changes to the diagram. The diagram depicts temperatures in the cabin and Flight Deck which, in a simulator, are fanciful. The temperatures can be adjusted using the various Temperature Dials (which are different on the Model 109 to other models) in the top right of the Overhead Panel. The rest of the Display diagram changes with changes to the switches on the Bleed Air Overhead Panel.

It can be interesting to adjust the various switches and see the effect on the diagram. It has no effect on the flying of the aircraft in the simulator. Note that to start the APU, the APU Switch is clicked to START followed by switching on the APU GEN switch.

This diagram is identical to the Boeing diagram.

# Boeing 747-8F Panel

## The Hydraulics Panel



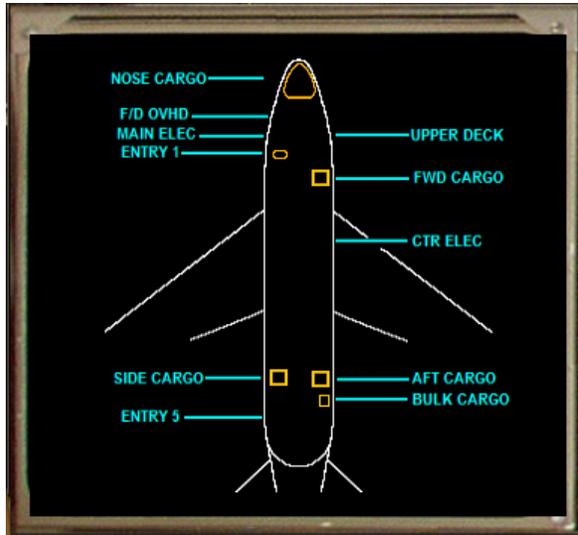
The Hydraulics Panel diagrammatically displays the settings on the Hydraulics Switch Panel on the Overhead Panel. Changes to the switches on this Overhead panel will result in changes to the diagram. Note that “Sys Fault” and “Press” will be displayed on the Overhead panel of the engines are not running but the Hydraulics Display panel does not directly show if the engines are running or not – although it can be inferred from the diagram.

This diagram is virtually identical to the Boeing diagram.

# Boeing 747-8F Panel

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## The DRS Panel



**Doors Panel**

The Door Panel diagrammatically displays the exits and their status.

These exits can be operated using the Ground Handling Panel which appears when the left side engines are shut down.

Exit M: Opens left Main Exit

Exit N: Opens Nose Cargo Door and left rear Main Deck Cargo Door

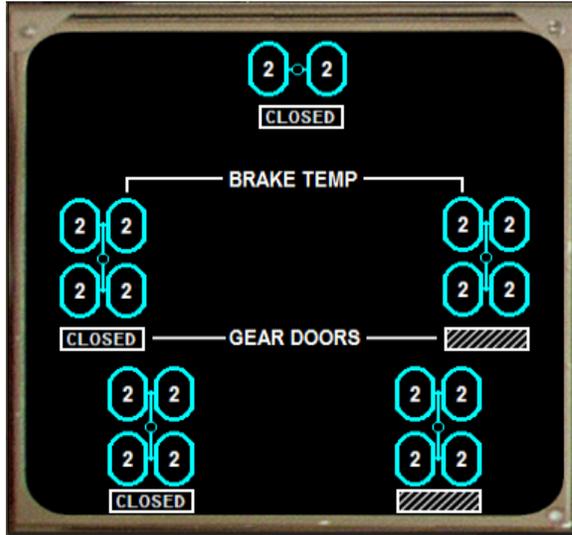
Exit B: Opens the rear right Bulk Cargo Door

Exit C: Opens front and rear right Cargo Doors

The diagram for each model is identical to the Boeing diagram and the method of showing open doors also follows the Boeing method.

# Boeing 747-8F Panel

## The Gear Panel



**Gear in Transit**

The opening and closing of Landing Gear doors is depicted correctly on this diagram.

This diagram is almost identical to the Boeing diagram but obviously does not emulate all its functions.

# Boeing 747-8F Panel

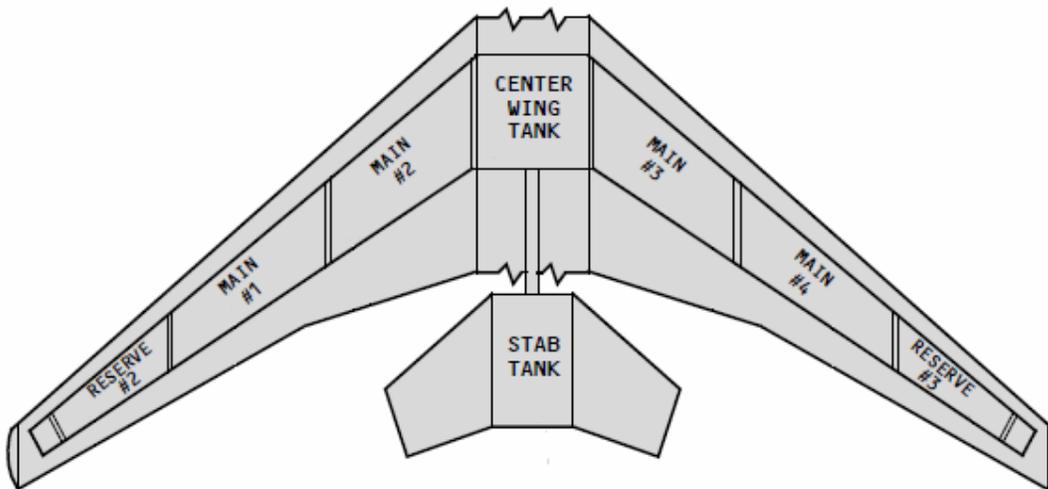
## The Fuel Management System

The Fuel Panel and synoptic display is one of the most complex features of this panel. Either manual or automated fuel management can be used.

The automated Fuel system operates in a similar manner to the Boeing system although is subject to constraints in FSX which:

- Do not allow fuel transfer between tanks
- Always feeds one engine from one fuel tank

Nevertheless the automated fuel system does take fuel from the tanks in a similar sequence as that specified by Boeing. The automated fuel system will operate the valves and switches and works automatically unless the overhead panel buttons are changed.



**Fuel Tanks Layout (as per Boeing)**

Initial configuration is:

- Engines 1 and 4 are fed from the Centre Wing tank. Engines 2 and 3 initially take fuel from the Wingtip tanks (Reserve tanks) until empty then switch to their respective main tanks.
- Engines 1 and 4 take fuel from the Stabiliser tank until it is empty then switch to the Centre Wing tank.

When the Centre Wing tank is empty, Engines 1 and 4 switch to Engines 2 and 3 Override pumps if the main tanks for those engines contain more fuel than those for Engines 1 or 4. Once the main tanks are equalised Engines 1 and 4 switch to their own main tanks.

On the real aircraft the Reserve fuel in the wingtip tanks is pumped to the Main tanks for engines 2 and 3 after the fuel level goes down to a certain point. The wingtip tanks do not directly feed any engine.

# Boeing 747-8F Panel

On the real aircraft the Fuel Management System pumps fuel as needed automatically from the Stabiliser tank to the Centre Wing tank provided the Stabiliser tank pumps are switched on. The Stabiliser tank does not directly connect to any engine.

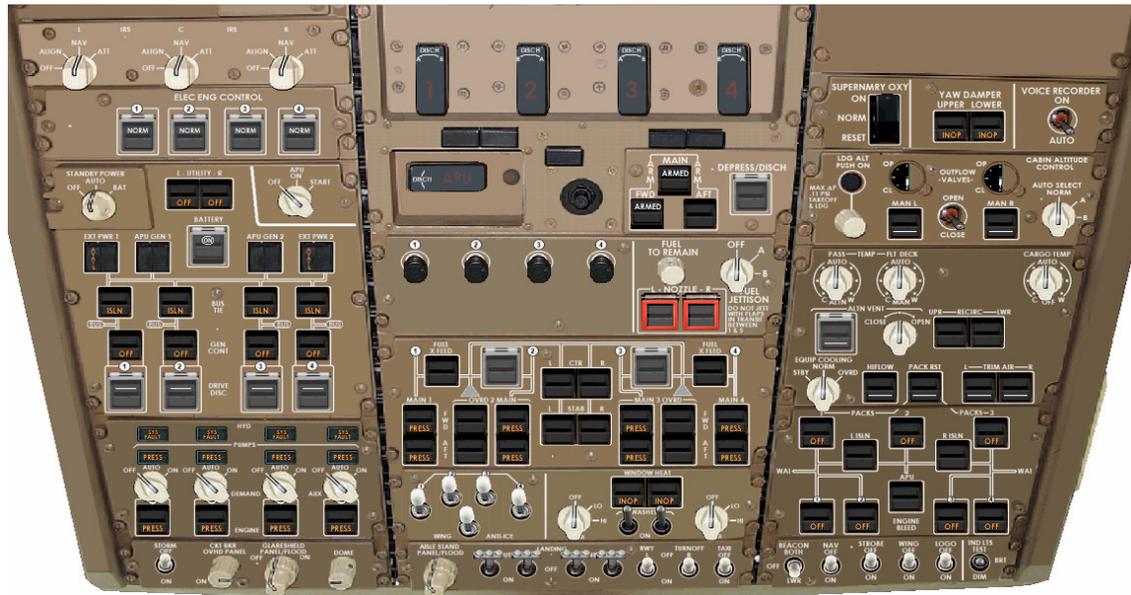
## Manual Fuel Control

If manual fuel control is used then abnormal conditions can be created. In particular when switching between tanks it is essential to switch on the new tank before switching off the old. As on the real aircraft fuel will flow on whatever path is set by the switches (although in FSX only on the path from one tank) but if there is no fuel path to an engine, the engine will shutdown. In FSX this will happen even if there is no fuel path only momentarily.

In addition if manual fuel control is used a Fuel Imbalance situation can be created which will be signalled by an EICAS message. On the real aircraft this is resolved by pumping fuel from one tank to another. On FSX this is not possible and the only way to resolve a fuel imbalance is to burn fuel from the overweight tank. This is slower than the real world solution.

This simulation allows fuel to be pumped from a single pump to several engines however in real life one pump would be unable to provide sufficient pressure to supply more than one engine.

## Overhead Panel

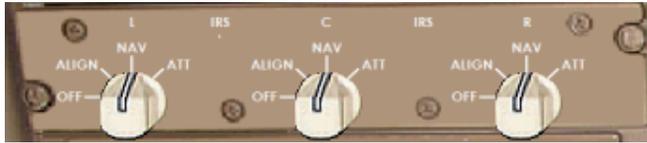


The Overhead panel is a semi-perspective view of most of the Boeing overhead panel with almost all switches working with most performing their assigned function. The panel is very similar to the Boeing 747-400 overhead with the main differences being in the air conditioning panel.

The Overhead Panel is divided into several sub-panels some of which are linked to the CRT displays. The following table details the switches and their functions from top to bottom, left to right:

# Boeing 747-8F Panel

## Overhead Inertial Reference System (IRS) Panel



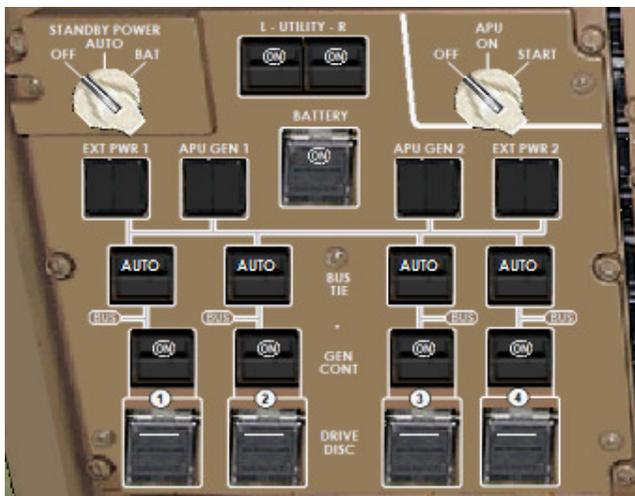
The three IRU Mode selectors are used to initialize the IRS navigation system. When the dial is set to ALIGN a message appears in the EICAS messages. Other than that these knobs have no effect on the simulation.

## Overhead EEC ENG Control



Electronic Engine Control (EEC) sets the parameters to control the engines. Although these functions are not supported in FSX, an EICAS message does appear if a switch is set to ALTN. Also setting to ALTN disconnects the Autothrottle as ALTN mode does not work with Autothrottle.

## Overhead Electrical Panel



The Electrical Panel Buttons control the functions displayed on the Electrical Panel Display selected from the Buttons Panel.

Note in particular that, to start the APU, click on APU Start then click on APU GEN (1 or 2).

Note also that clicking on the DRIVE button will permanently shut down the generator which can only be restarted by ground maintenance.

# Boeing 747-8F Panel

## Overhead Hydraulics Panel



The Hydraulic Panel Buttons control the functions displayed on the Hydraulic Panel Display selected from the Buttons Panel.

Note that “Press” appears above the dial if the dial is set to off and “Sys Fault” also appears if Hydraulic pressure is low (e.g. when the engines are off).

It can be interesting to try the buttons in conjunction with the Hydraulic Display Panel to see the effect of the various switches.

## Overhead Panel Lights Panel

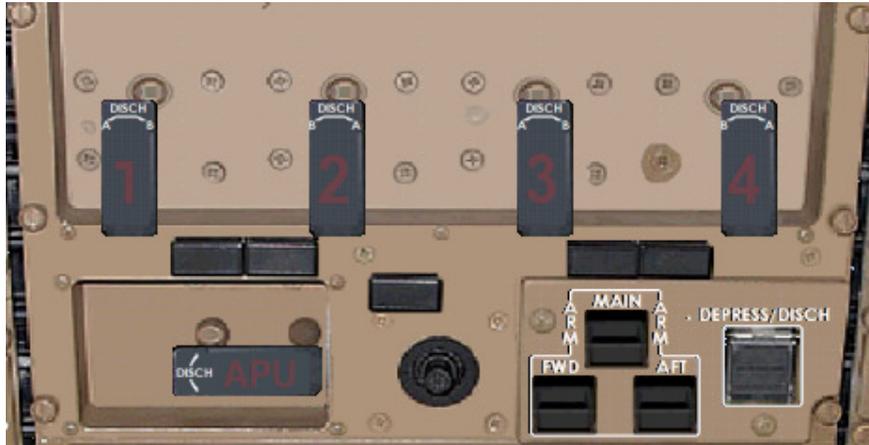


### Panel Lights Panel

Switch	Function	Action
STORM	Illuminates all FSX default panel lights.	Click once to switch on and again to turn them off.
CKT BKR OVHD PANEL	Switches on and off the Overhead Panel white back lights.	Click once to switch on and again to turn them off. Note that this switch has a slight delay before operating.
GLARESHIELD PANEL/LOGO	Switches on and off the Glareshield Panel white back lights.	Click once to switch on the Panel lights and again to turn them off. Note that this switch has a slight delay before operating.
DOME	Switches on Overhead Dome lighting	Click once to switch on and again to turn them off. Performs no function.

# Boeing 747-8F Panel

## Overhead Fire Control Panel



**Fire Panel**

The Fire Control handles illuminate if a fire is detected in the engines, APU, or Cargo hold (although Cargo hold fire is not supported by FSX). The functioning of the panel can be seen by pressing the round black button which is a Fire Test Button. The Fire extinguisher bottles can be discharged during the test. Pressing the Fire test button again resets the Fire Control panel and miraculously recharges the fire extinguisher bottles.

Actually on the real aircraft the Fire test button is on the panel above and this black button is really the cockpit microphone.

## Overhead Engine Start Panel



**Engine Start and Fuel Jettison Panel**

Individual engines start automatically by clicking on each Engine start button. Parking brakes should be set before starting engines.

# Boeing 747-8F Panel

## Overhead Fuel Jettison Panel

Fuel can be jettisoned only if the following parameter is set in the aircraft.cfg file:

**fuel\_dump\_rate = 0.000095 // %age of max qty per second, i.e. about 2000 kgs / min**

The above rate gives a roughly correct rate of dumping however note that this can take an hour and a half or more. There are other recommendations to use the variable 0.0167 which results in a faster rate of only about five minutes for the entire fuel load.

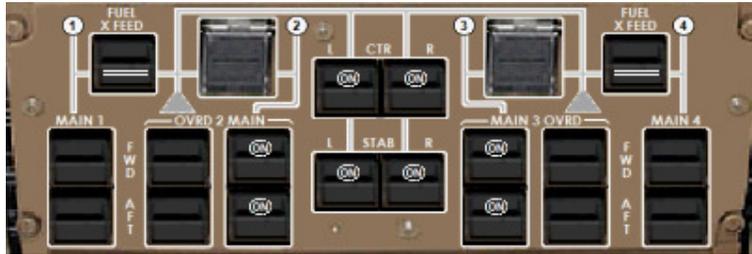
To dump fuel first set the Fuel Dump Arm dial to A, set the fuel to remain to what is desired (default in this simulation is 70000 kilograms (it should be MLW); minimum is 5000 kilograms). Note that in order to jettison the Main 2 and 3 OVRD pump switches as well as both Centre Tank and Stabiliser Tank pump switches must be on.

The rate of jettison on a real aircraft depends on several factors including number of pumps operating, number of jettison nozzles open as well as temperature. As a rule of thumb 2000 kilograms per minute is about average. In FSX there is only one rate of dumping set in the aircraft.cfg and this rate will apply no matter what pump settings are made but this rate can not be read from within the software. This means that the time remaining which displays in the Fuel panel is always based on 2000 kilograms per minute even if the variable in the aircraft.cfg differs.

Fuel Dump Panel		
Switch	Function	Action
FUEL TO REMAIN	Sets the fuel to remain after dumping. The dump will not stop at exactly this amount – it could be up to 1000 kgs less. The initial value is 70000 kilograms.	Right click right to increase the fuel remaining or left click to decrease. This can be done before or during the fuel dump.
NOZZLE	These two switches start the fuel dump through left and right nozzles on each wing. Whether one or both is on does not affect the dump rate in FSX.	Click to start the fuel dump and again to stop.
ARM	To start the fuel dump the Arm switch must first be set to A.	Click once to arm the Fuel Dump and again to disarm.

# Boeing 747-8F Panel

## Overhead Fuel Panel



Fuel Panel

The Fuel Panel Buttons control the functions displayed on the Fuel Panel Display selected from the Buttons Panel and can be used to override the automated fuel management system. Above is the initial configuration from the automated Fuel Management System.

It can be interesting to try the buttons in conjunction with the Fuel Display Panel to see the effect of the various switches. Note that the engines are Red when off and Green when running.

## Overhead Anti-Ice Panel



Anti-Ice Panel

There are four switches for engine anti-ice and one for Wing anti-ice.

The window heat, windshield wiper, and windshield washer switches all work but perform no function in FSX. The Windscreen washers automatically return to off after operating.

## Overhead Landing Lights Panel



The AISLE STAND PANEL/LOGO Switch will illuminate the Main Panel white back lighting.

Clicking on any of the Landing Light Switches will turn the lights on and off. The Runway Turnoff Switches will rotate the Landing Lights to the left or right. Switching on one switch will switch off the other switch.

# Boeing 747-8F Panel

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## Overhead Yaw Damper and Oxygen Panel



**Yaw Damper Panel**

The Yaw damper Switches are used to switch the Yaw dampers on and off. The oxygen switch on the left deploys oxygen masks. They can not be retracted.

## Cabin Altitude Control Panel



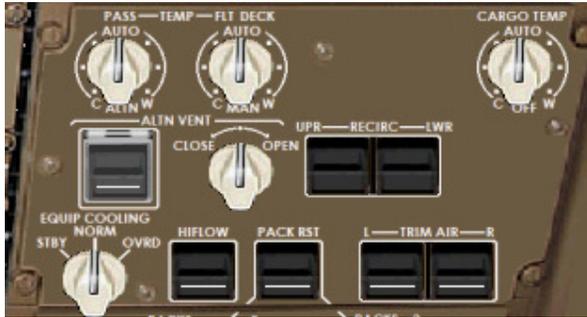
The LDG ALT button and dial can be used to manually set the Landing Altitude displayed on the EICAS. The default on the EICAS is the landing altitude of the destination airport in the Flight Plan and will display as “AUTO” on the EICAS. If there is no Flight Plan it will display as “0 MAN” on the EICAS. It can be altered in either case by this dial.

Note that the Cabin Altitude section on the EICAS will only display if there is an anomaly (e.g. Manual Landing Altitude)

The gauges measure the pressurisation air outflow. To manually dump air pressure to match the cabin altitude to the outside pressure the two Manual outflow switches are selected then the centre switch is set to open. This will bring the cabin pressure to the same as the outside pressure and can not be reversed – there is no provision in FSX to switch it off! Therefore as a general rule this function should not be used.

# Boeing 747-8F Panel

## Overhead Air Distribution Panel



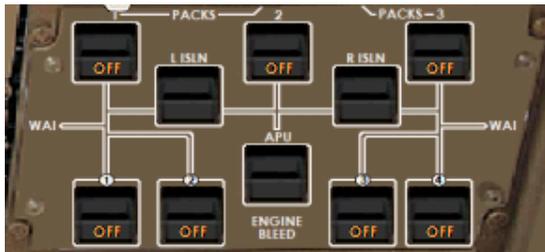
**Air Distribution Panel**

These two panels control the air circulation in the aircraft and therefore have limited utility in FSX. They control the functions displayed on the ECS Panel Display selected from the Buttons Panel.

The dials are used to adjust the Flight Deck and Cargo cabin temperatures. Their only effect is to change the temperatures shown on the ECS Display panel.

The lower buttons adjust the airflow shown on the ECS display panel. It can be interesting to try the buttons in conjunction with the ECS Display Panel to see the effect of the various switches.

## Overhead Bleed Air Panel



This panel controls the bleed air from the engines and the ECS Synoptic display.

Operating the switches results in changes to the ECS display but performs no function in FSX. EICAS messages will also be displayed depending on the switch settings.

# Boeing 747-8F Panel

## Overhead Outside Lights Panel



The effect of the Beacon, NAV, Strobe, Wing, and Logo switches on this panel will vary according to the FSX model used. They work as follows on the Opensky model:

- **Beacon:** Flashing red light above upper deck and below the fuselage.
- **NAV:** Flashing white lights at wingtips, Red and Green lights at wingtips, and white light at rear of fuselage.
- **Strobe:** Flashing white light at rear of fuselage
- **Wing:** No effect
- **Logo:** Switches on Logo light illuminating the tail.

## Throttle Quadrant



The Throttle Quadrant is probably the most challenging panel to design fairly realistically. One approach is to make it completely 2D which is easiest but does not have a good appearance. This panel uses a top down semi-perspective view which is not too bad.

## Throttle Operation

Using the mouse grip function to control the Throttle Quadrant has always been tricky. This panel uses a new simpler way of controlling the throttle quadrant with the mouse wheel and both mouse buttons.

All levers are operated with left and right mouse clicks: left click to pull the lever and right click to push the lever. This can be done anywhere in the single mouse area for each lever. The Throttle itself is operated with the mouse wheel in a similar way to the slider on a joystick. More details are given under throttles.

# Boeing 747-8F Panel

THROTTLE QUADRANT		
Switch	Function	Action
Parking Brake	The Parking Brake for use on the Ground.	Click to set the brake and click again to release the brake. The Parking Brake can also be set using the “.” Key and also from the Ground Handling window.
Speed Brake	The Speed Brakes are deployed using left and right click.	See below for detail on how to operate the Speed Brakes.
Throttles	The main Throttle levers for the four engines.	See below for details of how to operate the throttles.
Fuel Control	When engines are running these will be in the RUN (Up) position. To shut down engines move to CUTOFF (Down).	Click on each switch once to shut down engines. To restart an engine the start buttons on the Overhead Panel must be used.
Flaps Lever	Moving this lever will deploy flaps to the degrees indicated on the Pedestal	Left click to incrementally deploy flaps and right click to incrementally retract them.
ALTN Stabiliser Trim	This button on the real aircraft is used for alternate stabiliser control but in this panel is used for Stabiliser Trim.	Left click for Nose Down and right click for Nose Up.

## Speed Brake Operation

Speed Brakes or Spoilers have two functions: when in the air they can be partially deployed to reduce speed and/or lift. On the ground they are used fully deployed during landing to dump lift and slow the aircraft.

In order to function they must first be armed and this is done by left clicking anywhere on the Speed Brake lever.

Once armed if the aircraft is on the ground another click will fully deploy the Speed Brakes.

If the aircraft is in the air, the Spoilers can be partially deployed by using the mouse wheel after arming them.

# Boeing 747-8F Panel

## Throttles and Reversers

The Throttles have a simple up and down sliding action. The use of the mouse may take a little getting used to but is very simple in practice.

Moving the mouse wheel up while positioned on any Throttle mouse area will increase the throttles and moving the wheel down will decrease them. By default moving the mouse wheel will move all throttles together.

To move an individual engine throttle, right click anywhere on the Throttle for the engine to be selected. Following the right click moving the mouse wheel on that Throttle will move only that throttle. Moving the mouse wheel on any of the other three engine throttles will move those three throttles together. Right clicking again on another throttle will join that throttle to the first so that the two pairs of throttles will both work together. Right clicking again on a selected throttle will join it back to the main group of throttles.

Left click will return engines to idle from any position either individually or together.

If you are reducing throttle with the mouse note that it will stop at idle but clicking on the centre mouse button will allow the deployment of the reversers from the mouse wheel.

The use of the mouse wheel is fairly smooth however note that each click of the wheel increases or decreases the throttle by 5%. For the reversers each click increases or decreases the reverse thrust by 20% of the maximum reverse thrust (25% of the forward thrust) so 5 clicks goes to the maximum reverse thrust).

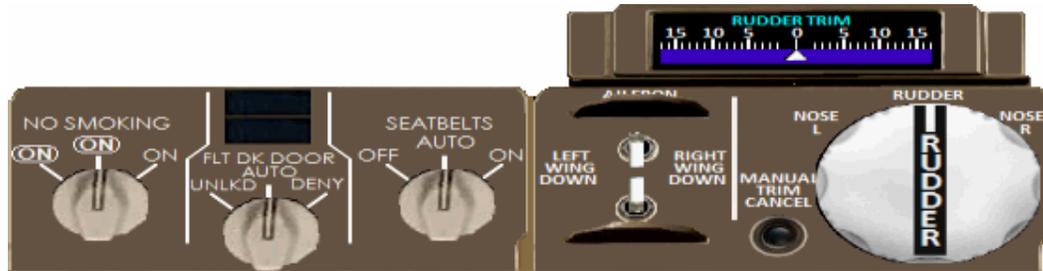
## Other Throttle Quadrant functions

Other functions available on the Throttle Quadrant are detailed below:

THROTTLE QUADRANT		
Switch	Function	Action
Parking Brake	The Parking Brake for use on the Ground.	Click to set the brake and click again to release the brake. The Parking Brake can also be set using the “.” Key and also from the Ground Handling window.
Fuel Control	When engines are running these will be in the RUN position. To shut down engines move to CUTOFF.	Click on each switch once to shut down engines. To restart engines the Start or Autostart buttons on the Overhead Panel must be used.
Flaps Lever	Moving this lever will deploy flaps to the degrees indicated on the Pedestal	Right Click to incrementally deploy flaps. Left click to retract flaps.
Popup Window	A popup window can be selected which has controls for Rudder and Aileron Trim as well as No Smoking and Fasten Seat belt signs.	Click anywhere on the narrow band bottom panel of the Throttle Quadrant for the popup panel to display.

# Boeing 747-8F Panel

## Throttle Quadrant Trim Popup Panel



POPUP PANEL		
Switch	Function	Action
Aileron Trim	This adjusts the aileron trim to turn the airport on a fore and aft axis.	Left or right click on the arms to adjust the aileron trim.
Rudder Trim	The Rudder Trim can be altered by turning the dial.	Left click to turn the dial anti-clockwise and right click to turn clockwise.
No Smoking Dial	The No Smoking sign comes on automatically on engine start in a freighter.	Non-operative
Flight Deck Door	This switch locks and unlocks the Flight Deck door.	No function in FSX.
Fasten Seatbelts Dial	This can be set to Auto when it will automatically turn off at 10000 feet altitude.	Right click to turn clockwise or left click to turn anti-clockwise.

# Boeing 747-8F Panel

## *The Radio Stack*



The Boeing 747-8F has three VHF radios, each with a standby, labelled L, C, and R.

- Radio L is used only for voice communication and is COM 1 in FSX terms.
- Radios C and R can be used for both voice and data but for FSX they are designated NAV 1 and NAV 2.

The radios are initially set to their appropriate default settings at start up but can be swapped around by pressing one of the three buttons in the top row. The radios are initially on and can be switched off by clicking on the OFF button.

Note that although the radios have three decimal places FSX supports only two.

Radio frequencies can be set by Incrementing or Decrementing an existing Frequency on a STBY Radio then swapping that frequency with the active radio:

- To change the whole number of the frequency position the cursor on the number and left click to decrease or right click to increase the number.
- To change the decimal of the frequency position the cursor on the decimal portion and left click to decrease or right click to increase.
- Note that the decimal will click over the whole number when increasing or decreasing over zero
- To swap the STBY frequency with the active click on the  button

Note that on the VC the standard Boeing radios have been used as they fit into the slot provided. Functionality is similar. The radio tuner in the FMC can also be used.

# Boeing 747-8F Panel

## *The FMC*



Two FMCs are provided for the Captain and First Officer. They can have separate displays but any changes made on the FMC to the VNAV or other navigation data will be reflected on both FMCs.

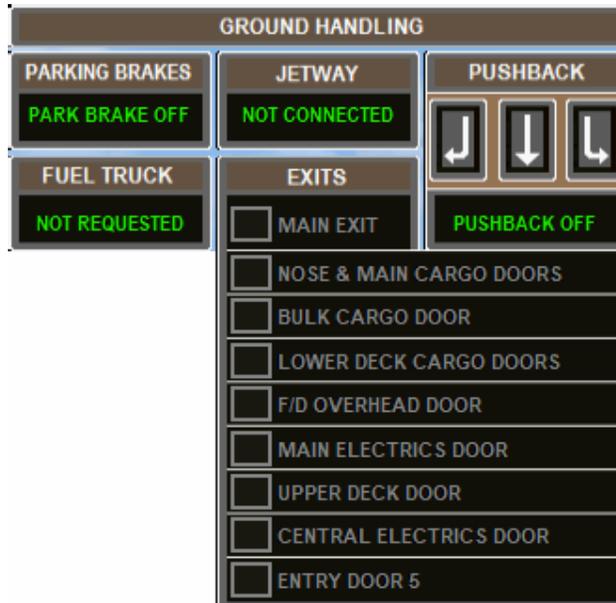
FMC data displays on the FMC in the main screen but the display is too small to read so clicking anywhere on the main screen FMC will display the full sized FMC on the left or right of the screen respectively.

Note that on the VC the three FMCs are not separate and will reflect the Captain's FMC only.

The FMC functions are described in more detail in the separate FMC Manual.

# Boeing 747-8F Panel

## *Ground Handling Panel*



### **Ground Handling Panel**

This is a small heads-up display that appears only when the left side engines are shut down. Parking Brakes must be applied before any of the other functions work: clicking on the Parking Brakes switch on the panel is one way to apply them.

Where there is a Jetway it can be connected by clicking on the “Press for Jetway” Switch. Note that Jetways will generally only be visible if Scenery Complexity is set to “Dense” or more.

The list of exit buttons include all of the exits on the Boeing 747-8F. Only four of them are animated as follows:

- **Main Exit:** Opens left Main Exit
- **Nose & Main Cargo Doors:** Opens Nose Cargo Door and left rear Main Deck Cargo Door
- **Bulk Cargo Door:** Opens the rear right Bulk Cargo Door
- **Lower Deck Cargo Doors:** Opens front and rear right Cargo Doors

The panel disappears if the simulator is paused as it can not operate while paused.

A Fuel Truck can be requested by clicking on the “Not Requested” button.

Finally pushback can be easily done first by selecting the direction required then clicking on “Pushback Off”.

Note that as this panel only becomes visible when the left side engines are off and, as FSX starts by default with engines running, it is necessary to shut down the engines before the panel can be seen. The panel will disappear when a left side engine is started which normally happens after pushback.

# Boeing 747-8F Panel

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