



# **Concorde**

## **FSX Flight Deck Panel**

### **Version 1.0**

### **Documentation**

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# CONCORDE

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## CREDITS

This panel would not have been possible but for the extensive information and photographs on the website [www.heritageconcorde.com](http://www.heritageconcorde.com). In addition included in this package is the aircraft model by **Libardo Guzman Garcia**.

The beautiful photo by **Andiroto** of the Flight Engineer's panel has been used as a basis for the cartoon.

A few elements of **Philippe Wallaert**'s excellent work have been incorporated although all of the gauges are new.

The sound gauge by **Doug Dawson** is used for sundry sounds.

Pretty much everything else in the panel is new and designed around the technical data on the Heritage Concorde website.

## INSTALLATION

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

This panel comes packaged with the Concorde model by Libardo Guzman Garcia. This is the aircraft model on which the VC works pretty well. The included model only has the British Airways paint for G-BOAC which is the aircraft on which this panel is mostly based. Other paints are available in other packages and the panel can be installed in any other Concorde model with no guarantee that the VC will work.

In order to install the package:

1. Copy the Concorde directory to the \fsx\Simobjects\Aircraft subdirectory. If you already have a subdirectory called Concorde then you can rename this or the other directory to anything.
2. Copy the contents of the \Effects folder (including \Texture subdirectory) to \FSX\Effects
3. If you wish to use the GPSNEW in other aircraft then copy GPSNEW.CAB to the \fsx\gauges subdirectory.

That should be all that is needed.

### ***Installing the Panel in another aircraft***

1. Copy the \panel subdirectory only into the aircraft folder. If there is already a \panel directory then rename the new directory to be say panel.xx and change the aircraft.cfg to panel=xx to redirect to the new panel subdirectory.
2. Copy the \sound subdirectory to your aircraft folder if you want the background sounds
3. Copy the contents of the \Effects folder (including \Texture subdirectory) to \FSX\Effects
4. Make changes to the aircraft.cfg as shown in the next chapter.

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

If you are using an aircraft other than the one supplied with this panel you will need to change the aircraft.cfg to ensure the correct functioning of this panel. The aircraft.cfg is found in the \fsx\simobjects\aircraft\concorde subdirectory. The aircraft supplied with this panel has already had these changes made.

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

### **[Electrical]**

Under this section the following lines need to show as follows:

```
max_battery_voltage=28  
generator_alternator_voltage=200
```

### **[Radios]**

The radios lines should be:

```
com.1 = 1, 0  
com.2 = 1, 0  
nav.1 = 1, 0, 1  
nav.2 = 1, 0, 0  
adf.1 = 1  
adf.2 = 1  
Transponder.1 = 1  
Marker.1 = 1
```

Concorde did not have standby radios.

### **[hydraulic\_system]**

These lines should read:

```
Electric_pumps = 2  
Normal_pressure=4000
```

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## [Fuel]

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

In addition the following lines should show:

```
electric_pump=4  
engine_driven_pump=0
```

The following lines should be substituted for whatever fuel tank configuration is shown:

```
//      Long  Wide  High  Gals Unuse  
Center1  =  24,   0,   -0.9, 3689, 0  // Tank 9  
Center2  =   8,   0,   -0.9, 3968, 0  // Tank 10  
Center3  = -68,   0,   -0.9, 3462, 0  // Tank 11  
LeftMain  = -16, -17,   -1.5, 6242, 0  // Tank 5 + 6  
LeftAux   =  -1, -12.5, -1.5, 1395, 0  // Tank 1  
LeftTip   = -43, -12.5, -1.5, 1520, 0  // Tank 2  
External1 = -35, -32,   -1.5,  740, 0  // Tank 5A  
RightMain = -16,  17,   -1.5, 6729, 0  // Tank 7 + 8  
RightAux  =  -1,  12.5, -1.5, 1395, 0  // Tank 4  
RightTip  = -43,  12.5, -1.5, 1520, 0  // Tank 3  
External2 = -35,  32,   -1.5,  740, 0  // Tank 7A
```

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 recommended rate for Concorde is 0.0067.

## [deice\_system]

For Wing de-icing to work the parameter **structural\_deice\_type** should not be zero (2 is correct but 1 also works).

## [Exits]

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

## [Autopilot]

Make sure that:

```
default_vertical_speed = 2000
```

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## [Lights]

In order to get the lighting effects to work the following [Lights] section must be in the aircraft.cfg:

### [lights]

// Types: 1=beacon, 2=strobe, 3=navigation, 4=cockpit, 5=landing,  
6=taxi, 7=recognition, 8=wing, 9=logo, 10=cabin

```
light.0 = 3,-101.950, 0.000, 7.450, fx_Conc_navwhi
light.1 = 3, 43.400, 5.300, 0.370, fx_Conc_navred
light.2 = 3, 43.400, -5.300, 0.370, fx_Conc_navred
light.3 = 3, -39.630, -37.500, -2.490, fx_Conc_navred
light.4 = 3, -39.630, 37.500, -2.490, fx_Conc_navgre
light.5 = 2, 43.430, 5.200, 0.370, fx_Conc_strobeh
light.6 = 2, 43.430, -5.200, 0.370, fx_Conc_strobeh
light.7 = 2,-101.950, 0.000, 7.450, fx_Conc_Beaconh
light.8 = 4, 76.000, 0.000, 4.550, fx_Conc_vcflight
light.9 = 6, -74.350, 11.900, 19.800, fx_Conc_taxi
light.10 = 6,-74.350, -11.900, 19.800, fx_Conc_taxi
light.11 = 8, 33.430, 0.000, -0.250, fx_Conc_wing_vortex
```

## [SMOKESYSTEM]

The engine effects for this aircraft are in the [Smokesystem] section. DO NOT USE THE “T” KEY FOR SMOKE EFFECTS ON THIS PANEL. The [Smokesystem] needs to look like this for the effects to work:

### [SMOKESYSTEM]

```
smoke.0 = -62.000, -19.300, -2.330, fx_Conc_smoke
smoke.1 = -62.000, -15.500, -2.330, fx_Conc_smoke
smoke.2 = -62.000, 15.500, -2.330, fx_Conc_smoke
smoke.3 = -62.000, 19.300, -2.330, fx_Conc_smoke
smoke.4 = -49.500, 19.1, -2.50, fx_Conc_Afterburner
smoke.5 = -49.500, 15.0, -2.50, fx_Conc_Afterburner
smoke.6 = -49.500, -15.0, -2.50, fx_Conc_Afterburner
smoke.7 = -49.500, -19.1, -2.50, fx_Conc_Afterburner
smoke.8 = -51.800, 19.55, -2.350, fx_Conc_Flame
smoke.9 = -51.800, 15.510, -2.350, fx_Conc_Flame
smoke.10 = -51.800, -15.510, -2.350, fx_Conc_Flame
smoke.11 = -51.800, -19.550, -2.350, fx_Conc_Flame
smoke.12 = -49.500, 19.550, -2.350, fx_Conc_Flame
smoke.13 = -49.500, 15.510, -2.350, fx_Conc_Flame
smoke.14 = -49.500, -15.510, -2.350, fx_Conc_Flame
smoke.15 = -49.500, -19.550, -2.350, fx_Conc_Flame
```

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Using these effects the engines will rotate when operating, emit smoke when starting as well as when cruising, and emit orange lights when afterburners are on. These effects have been matched against actual photos of Concorde in flight and found to be fairly accurate. For anyone who wants to use different effects for the engines the allocation is as follows:

smoke.0-3: Eng 1-4 Smoke effects. Comes on when above 70% N1  
smoke.4-7: Eng 1-4 Afterburner effects  
smoke.8-11: Eng 1-4 Engine effects when above 70% N1 no afterburner.  
smoke.12-15: Eng 1-4 Engine effects when below 70% N1

## ***Sounds***

Concorde sounds are not included in this package. The excellent package from **Kelvin Keeble** is highly recommended to use with this panel. His latest version dated 2020 can be found here:

<https://www.flightsim.com/vbfs/fslib.php?searchid=84086134>

Just copy his \sound directory to the aircraft directory and the sounds will work straight away.

## ***Afterburners***

On the real aircraft the Afterburners could be controlled by the pilot and manually switched on or off as required.

In this model the afterburners are controlled automatically and can not be overridden. Stage 1 comes on at 95% N2 and stage 2 comes on at 95.5% N2. It is unclear whether this is because of the Guzman model or because of FSX but very likely this is being done by the model.

The result is that although there are afterburner controls under the throttle levers they do not work on this model but possibly might work on other models.

## ***Graphics Problems***

It has been found that this aircraft runs best when using DirectX 9 in windowed mode. The panels do not line up correctly in full screen mode under DirectX 9. When using DirectX 10 however the panel will run correctly both in windowed and in full screen mode although the quality is better in windowed mode.

## ***Mouse Controls***

Mouse controls on this panel use all the mouse buttons. Knobs use the left and right mouse buttons to move anti-clockwise or clockwise. Left or Right click on simple switches or buttons will switch them on or 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***

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 learn more about the operation of this aircraft. Everything has been carefully done to follow the real aircraft as closely as possible.

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## **INSTRUCTIONS**

### ***Introduction***

This panel is based almost entirely on information found at [www.heritageconcorde.com](http://www.heritageconcorde.com) . This website has comprehensive technical information on Concorde and as far as possible all gauges on this model work according to the descriptions on this website. Where there is deviation from these descriptions this is indicated in this manual.

The individual gauges on this panel are fairly simple however the sheer multiplicity and density of gauges make this a difficult panel to understand. The fuel management system which takes up most of the Flight Engineer's panel in particular is highly complex and it is recommended to read the detailed chapter later in this manual

This panel was developed on FSX Acceleration edition and designed around the model developed by Libardo Guzman. The beautiful work done by Philippe Wallaert was the inspiration for this panel but none of the gauges are based on his work.

The panel is designed for 1920X1080 monitors but since the gauges are very high resolution should work well on larger panels as the actual resolution is about double so should give good resolution on 3840X2160 monitors. For higher resolution monitors the panel.cfg will need to be rewritten. It will not work so well on monitors smaller than 1920X1080.

### ***Virtual Cockpit (VC)***

The VC of this panel is fully functional the same as the 2D panel with the exception that the Flight Engineer's panel does not work on the VC. This manual refers throughout to the 2D panel however everything works the same in the VC. Note that if you have difficulty reading the gauges on the 2D panel – they are more readable on the VC.



# CONCORDE

## Night Lights



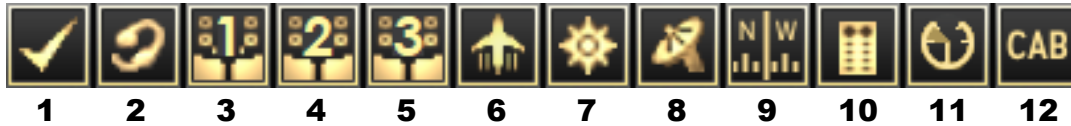
As can be seen from the picture above the Concorde cockpit is not brightly lit. There were very few backlit gauges on the real aircraft and the only light available was from flood lights which are switched on from the third Overhead Panel in FSX by clicking on any of the lighting knobs

With the FSX lights on the appearance is as below which is still dark compared to modern aircraft but should be adequate for night operations.



# CONCORDE

## **Icons**



These icons appear in the centre left of the main panel. They are mostly not standard icons. They will display sub-panels as follows:

- Icon 1: FSX Kneeboard Panel
- Icon 2: FSX ATC Panel
- Icon 3: Overhead Annunciator Panel
- Icon 4: Overhead Fire Panel
- Icon 5: Overhead Large Panel
- Icon 6: Centre Pedestal and Throttle Levers
- Icon 7: FSX Map Panel
- Icon 8: GPS Panel
- Icon 9: Compass Display
- Icon 10: Flight Engineer's Panel
- Icon 11: Engine Start Panel
- Icon 12: Main Passenger Cabin Panel


## **How to Fly**

Flying Concorde is a little different to flying a normal aircraft. The author is not a pilot and provides these instructions as they work on this model. A former Concorde pilot may ridicule these instructions however they do work on this model. These instructions are for the novice. If you know how to fly Concorde manually you do not need these instructions.

You may need a few flights to practice and a relatively short flight is recommended. Bear in mind that because of the speed of Concorde a short flight would be at least 2 hours long in a normal aircraft. Some possibilities: Geneva to Copenhagen, New York to Atlanta, Sydney to Cairns, Bangkok to Hong Kong.

## **Starting the Engines**

Starting the engines on this model is a little simpler than on the real aircraft. Take the following steps:

1. Click on the  icon. On the real aircraft the Engine Start panel is located next to the Flight Engineer's left knee so could not be fitted on the main panel. This popup can be from the main panel or the Flight Engineer's panel. Can not be done from the VC.
2. Set Throttles to idle.
3. Set Parking Brake.
4. Make sure the fuel tank switches are all set to ON or AUTO. They are by default.
5. Right click on the bottom left knob and make sure one or both green lights are ON. If they are OFF the engine will turn over but not ignite.
6. Click on the Start Switches to start each engine one by one.

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## **Preparing for Takeoff**

1. Because of the high speed that Concorde operates at it does not like to turn. It is therefore best to select a Direct Flight Plan since selecting a VOR Flight plan can result in the aircraft zig-zagging a lot to try and follow the plan.
2. Set the cruising altitude in the flight plan to at least 40000 feet up to 60000 feet.
3. Click on the Yoke roundels to remove the Yokes.
4. For taxiing lower the visor and fully lower the nose using the Nose Position Selector.
5. Check the barber pole speed on the Airspeed indicator and set the Autothrottle speed on the Glareshield to a speed below this – usually around 300 knots. If under ATC control then 250 knots is the usual limit under 10000 feet altitude.
6. Set the Autopilot Heading to the runway heading.
7. If you are using ATC set the Autopilot Altitude to the ATC altitude. Otherwise it will set automatically to your cruising altitude.
8. Best to set the Flight Director ON at this stage then click on HDG HLD Button.
9. Set the Nose to 5 degrees down using the Nose Position Selector.
10. Check all engines are running.

## **Takeoff**

1. Ensure Brakes are OFF.
2. Advance throttles to FULL
3. Monitor Airspeed and maintain the aircraft in a straight line using rudder.
4. At VR raise the nose to about 20 degrees. This is much higher than a conventional aircraft but any less and the aircraft will not leave the ground.
5. Left Click on Elapsed Time on the Clock to start the Elapsed Time timer.
6. You may click on PITCH HOLD to stabilise the ascent. Click on HDG HOLD again to maintain heading.
7. Raise the landing gear as soon as possible using the G key. On Concorde the landing gear induces more drag than on a conventional aircraft so needs to be put away quickly.
8. Engage Autothrottle and Autopilot. Click on IAS HOLD and ALT HOLD. When clicking on ALT HOLD the VERT SPEED button will illuminate. This is to indicate that the rate of climb is set to 2000 feet per minute. Note that if you set VERT SPEED to OFF the Vertical speed will be set to zero and the aircraft will not climb or descend.
9. Once in stable climb switch off PITCH HOLD.
10. Due to the high pitch angle on Concorde use the mouse wheel on the Yoke roundel to adjust the eyepoint downwards in-flight. You may need to further adjust the eyepoint at different stages of the flight – especially on approach.

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## **Climb**

1. If using ATC follow instructions of ATC until clear to cruising altitude.
2. Raise the nose but keep the visor down.
3. Click on the INS Switch (just above NAV 1 Radio) to switch on INS System
4. Click on INS button to enter LNAV mode.
5. Once 10,000 feet is reached increase speed then click on MAX CLIMB to climb to Cruising Altitude. MAX CLIMB sets the vertical speed to 5000 feet per minute – normal for Concorde. The pitch angle is usually around 10 degrees.
6. When climbing monitor the barber pole in the Airspeed indicator and increase the Autothrottle speed as the barber pole increases. DO NOT EXCEED BARBER POLE SPEED.
7. The IAS ACQ light will illuminate when the selected Airspeed has been reached.
8. When you reach Mach 1 raise the Visor.
9. Once you exceed Mach 1 monitor the Mach Speed Indicator and continue increasing the airspeed. When the barber pole increases to over Mach 2 then click on MAX CRUISE and MACH HOLD. The aircraft will then increase speed to Mach 2.02. Once this is done the barber pole on the Airspeed indicator can be ignored.

## **Cruise**

1. Once Cruise Altitude has been reached the ALT ACQ light will illuminate.
2. Monitor the fuel and the Centre of Gravity (CG) gauges on the FE's station. As fuel is consumed from the forward tanks you will see the CG move towards the back. This is normal.

### **Caution Message**

Concorde must be flown in a precise manner. Exceeding the barber pole speed can quickly result in loss of control but sometimes loss of control can not be so easily explained. Other FSX aircraft can be more tolerant but Concorde is not. A loss of control in Concorde usually starts with an uncontrolled bank to the right together with the nose rising beyond 30 degrees. The movement is initially quite slow and is recoverable. The Autopilot will automatically disconnect when this happens and recovery is to manually bank to the left and restore the pitch to fairly close to neutral. Once stability is restored the Autopilot can be restarted but you may need to pause the simulation to study the instruments to find and correct the cause.

# CONCORDE

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## **Descent**

1. Descent should commence at least 250 nautical miles before destination.
2. Use the GPS to select the runway, transition, and approach and activate the Approach flight plan. You can also use the GPS to tune the ILS approach frequency and detect the signal.
3. Click on MAX CRUISE to switch it OFF. This will reset the Autopilot selected speed to Mach 1.
4. Initially descend to not lower than 30000 feet. Do not descend lower until speed has reduced to Mach 1. (Usually happens before 30000 feet). Descent rate is 2000 feet per minute.
5. Once the aircraft is slowed to Mach 1 switch off MACH HOLD and select a lower airspeed on the Autothrottle knob. If you have commenced descent at not more than 250 miles then you need to slow to 250 knots. For higher speed, descent should commence at a greater distance.
6. Click on IAS HOLD.
7. When below Mach 1 lower the Visor.
8. Monitor the GPS for the correct entry altitude for the Transition. On the real aircraft the pilot would consult his documents. You may choose to use the AUTO ALT feature on the GPS.
9. Monitor the Airspeed Indicator to ensure you remain below barber pole speed.

## **Landing**

1. Landing Concorde is relatively easy since no flap settings are required.
2. Slowly reduce speed to 160 knots for landing.
3. Continue in INS mode until more or less aligned with the runway or, if using ATC, follow ATC instructions until more or less aligned with the runway.
4. Click on LAND. If it does not come on there is not yet a valid Glideslope signal. Try again. You should be UNDER the Glideslope at this point.
5. The GLIDE light will illuminate if there is a valid Glideslope signal.
6. Concorde does not like approaching the Glideslope high and will not descend at a sufficient rate to meet the Glideslope if this happens. Ensure that the aircraft meets the Glideslope from below as is recommended practice for all aircraft.
7. Fully lower the nose.
8. Click on AUTOLAND to activate automatic braking on landing.
9. Lower the Landing Gear
10. The aircraft will approach with a nose up attitude of about 10 degrees. Flare is generally not needed for landing.

## **Go Around**

1. If you have met the glideslope too high you will need to Go Around.
2. Click on the GO AROUND Button.
3. Raise the nose.
4. Click on the INS Switch (just above NAV 1 Radio) to switch on INS System
5. Click on INS button to follow the missed approach procedure.
6. If using ATC advise missed approach and follow ATC instructions.
7. Cancel the approach flight plan and activate again or choose a new approach plan.



# CONCORDE

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## Shutdown

1. To shutdown engines go to Overhead Panel 3 and switch of the fuel valves at the bottom of the panel.
2. Apply Parking Brakes by advancing the lever on the right of the pedestal to the second position or from the Ground Handling Panel.
3. Use the Ground Handling Panel which appears when the engines are shutdown to open doors, connect jetways, and request fuel.

## MAIN PANEL



This panel depicts the full width of the Concorde main panel and is almost identical to the panel in the actual aircraft. Generally this panel was created from the aircraft registered G-BOAC as per the [www.heritageconcorde.com](http://www.heritageconcorde.com) website (despite the registration shown) however does not always conform exactly.

All of the gauges, switches, and dials visible here work as far as possible in conformance with Heritage Concorde.



# CONCORDE

It will be noticed that the Yokes, which unfortunately are non-working on the 2D panel, conceal some of the instruments. The yokes can be made to disappear by clicking on the circular hinge of each yoke giving the appearance below:



Descriptions of the various gauges follow starting from top left and moving down then to the right.

# CONCORDE

## *Captain's Side*



# CONCORDE

## The Landing System Panel



This Panel contains a series of warning lights which illuminate according to the table below:

| LANDING SYSTEM                        |  |
|---------------------------------------|--|
| Light                                 | Function   |
| <b>TERRAIN Light</b>                  | Flashes with audio “Too Low Terrain” during descent when Radio Height is less than 800 feet and flaps are not extended.  |
| <b>M/CG Light</b>                     | Illuminates when the Centre of Gravity position is less than 50%   |
| <b>TYRE Light</b>                     | Only illuminates during Test. Should illuminate when there is a Tyre burst but FSX does not support this function.   |
| <b>AP Light</b>                       | Flashes when the Radio Height is greater than 400 feet but the Autopilot is not on.  |
| <b>AT Light</b>                       | Flashes when the Autopilot is on but the Autothrottle is not.  |
| <b>Approach Warning Lights</b>        | Active when the aircraft is in Approach mode. Left light illuminates when aircraft is left of glideslope. Right light illuminates when right of glideslope. Top light illuminates when aircraft is above glideslope. Bottom light illuminates when aircraft is below glideslope. |
| <b>LAND 2 Light</b>                   | Illuminates when both Autopilot and Autothrottle are on and the LAND button on the glareshield panel is on   |
| <b>LAND 3 Light</b>                   | Illuminates when both Autopilot and Autothrottle are on and the Glideslope is captured.  |
| <b>DECISION HEIGHT Light (Orange)</b> | Illuminates when the Radio Height is less than the Decision Height.  |
| <b>TEST Button</b>                    | Pressing this button illuminates all of the lights on the Landing Panel  |

# CONCORDE

## The V Speeds Panel



This panel is not a panel which appears on the Concorde and may be deleted if not liked. It displays the V Speeds during takeoff and disappears after the aircraft is airborne. It always displays the same V Speeds as the tables to calculate V Speeds for Concorde are not available.

To delete this display go to the panel.cfg and put 2 slashes in front of:  
`//gauge71=CNC!A CNC Vspeeds, 130, 435, 250, 25`

## The Transfer Switches Panel



These switches are used to switch between onboard computers on the real aircraft. Except for the DEV switch they do not perform any function in FSX.

The DEV Switch switches the HSI Indicator between OBS 1 and OBS 2.

# CONCORDE

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## The Accelerometer



The triangular bug on the left depicts the acceleration of the aircraft in feet per second squared.

The bar on the right depicts the Angle of Attack of the aircraft in degrees.

## The Standby Airspeed Indicator



The needle shows the Indicated Airspeed.

The Barber Pole Needle shows the maximum Indicated Airspeed up to 600 knots.

The orange Triangle shows the Vref speed. Initially it shows the default speed but can be adjusted using the dial at the bottom right of the gauge using left and right mouse buttons.

The channel on the left of the gauge shows the Mach speed aligned with the needle after the airspeed goes over 250 knots. It will show Mach 0.8 until the speed exceeds that.

# CONCORDE

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## The DME Panel



The DME panel displays the distance to the VOR/DMEs detected by NAV1 and NAV 2.

## The Airspeed Indicator



The main Airspeed Indicator shows airspeed up to 570 knots.

The Barber Pole needle shows the maximum airspeed for a given altitude.

The T shaped airspeed bug show the airspeed selected for the Autopilot. It can be adjusted with left and right mouse keys by the knob at the bottom left.

The orange light at top left will illuminate when there is more than a 20 knot discrepancy between the Indicated and selected Airspeeds.

The Airspeed Standby Knob at the bottom left can be switched to standby mode however it has no effect in FSX.



# CONCORDE

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## The Mach Meter



This meter measures the Mach speed when greater than 0.45 Mach.  
The barber pole needle shows the maximum allowed mach speed.  
The two yellow shutters show the minimum and maximum mach speeds.

## The VOR Indicator



The VOR Indicator shows the direction of the VORs as indicated by NAV 1 and NAV 2 radios. VOR 1 is indicated by the large needle, VOR2 by the smaller needle. When no VOR is detected its arrow points to the right and a striped shutter appears over the display window.

# CONCORDE

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## The Attitude Indicator



A fairly standard Attitude Indicator similar to but not quite the same as on the real aircraft. The CHECK ATT light comes on when bank angle is greater than 30 degrees or the pitch angle exceeds 40 degrees.

The DH light comes on when the Radio Altitude is below the Decision Height.

# CONCORDE

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## The Horizontal Situation Indicator



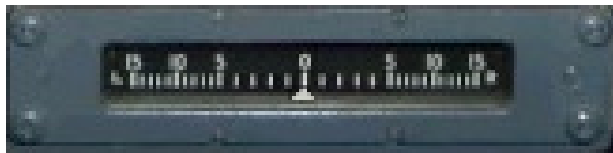
The HSI indicator shows the direction of OBS 1 or OBS 2 depending on the setting of the DEV Switch on the Transfer Switches panel.

The HDG light comes on when the Autopilot is not in Heading Mode. This is different to the real aircraft where it comes on when there is a discrepancy between the two HSIs.

The top left window shows the miles to the next waypoint and the window in the top right shows the Ground Speed.

Pressing the TEST button displays all 8s in the Miles to run and Ground Speed windows.

## The Sideslip Indicator

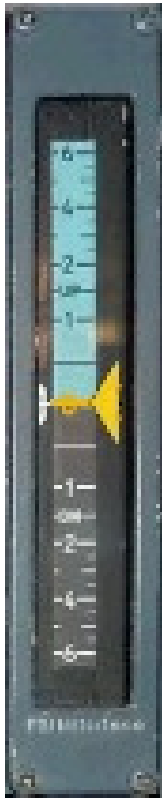


Indicates amount of Sideslip in degrees.

# CONCORDE

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## The Vertical Speed Indicator



The yellow triangle on the right indicates the vertical speed in feet per minute.

The white bug on the left shows the selected vertical speed from the autopilot.

## The Flight Director Switch



Flight Director On / Off Switch

# CONCORDE

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## The Automatic Direction Finder



The arrows point to the NDBs tuned by ADF 1 and ADF 2. The Orange arrow points to ADF 1 and the green arrow to ADF 2.

## The INS RDR Lights Panel



These lights indicate some functions of the INS navigation system. They do not illuminate in this panel.

# CONCORDE

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## The Radio Altimeter



Displays Height above terrain up to 2500 feet.

## The Altimeter



Standard Altimeter with barometric pressure digital display.

The amber light is on when the aircraft is within 900 feet of the autopilot selected altitude. It flashes if the aircraft departs from that altitude by more than 300 feet.

The knob at the bottom left can be rotated using the left and right mouse buttons to adjust the barometric pressure.

The standby switch at the bottom right illuminates a standby light above the digital display. Other than that it has no effect.



# CONCORDE

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## The Standby Attitude Indicator



A basic Attitude Indicator.

## The TCAS Indicator



The TCAS indicator also shows Vertical Speed in feet per minute on the dial to a maximum of 6000 feet per minute.

Traffic is depicted using the standard FSX TCAS display which does not take altitude into account. The monochrome depiction of terrain is an added feature which was not present in the real aircraft.

The buttons at bottom left and right can be used to increase or decrease the range of the TCAS display. Initially the range is 8 nautical miles. It can be adjusted to 4 or 16 nautical miles.

# CONCORDE

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## The INS Warning Indicator



On the real aircraft the lights on this indicator show a fault in the INS Navigation system. This is a dummy gauge for FSX.

## The Clock



At first sight a fairly standard digital clock with stopwatch function.

The buttons work as follows:

### Centre Top Switch:

**TIMER (to the left):** sets the CHRONO display to display a countdown. Use the GMT Selector (top right) to preset the countdown value

**CHRONO (to the right):** The CHRONO display operates as a normal stopwatch controlled by the CHRONO button in the bottom right.

### GMT Switch (top right):

This switch can be rotated with left and right mouse buttons.

Rotating right to TEST will illuminate all the lights in the clock.

Rotating left does the following:

- 1 step: Stops the GMT Clock
- 2 steps: Speeds up FSX to 16 times speed
- 3 steps: Speeds up FSX to 64 times speed

# **CONCORDE**

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## **Elapsed Time Selector Switch (centre right):**

This switch is normally at the centre position.

Switch left to RUN to start the Elapsed Time Display

Switch Right to STOP to stop the Elapsed Time Display

Switch right again to RESET to stop and reset the Elapsed Time Display

## **CHRO Button (Bottom Right)**

This button controls the CHRONO Display

Click once to start the display

Click again to stop the timer

Click again to reset the timer

## **GMT Display**

This displays the GMT or Zulu time. It is unusual in that the seconds are displayed as bars as follows:

0 to 14 seconds: No bars

15 to 29 seconds: Bottom bar lit

30 to 44 seconds: Two bottom bars lit

45 to 59 seconds: All three bars lit

## **ELAPS Display**

Displays the Elapsed time in hours and minutes from the time the Elapsed Time selector was set to RUN.

## **CHRONO Display**

Either displays a Stopwatch or countdown timer depending on the selection of the top centre switch in minutes and seconds.

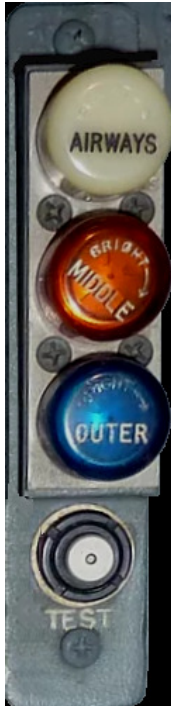
## **CHRONO Lights**

On either side of the CHRONO display are two amber lights which flash when the countdown timer is within 5 seconds of zero. They operate only when the CHRONO display is in TIMER mode.

# CONCORDE

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## The Markers Display



This display panel illuminates when passing certain waypoints.  
The white marker flashes when within 1 nautical mile of the end point of the current flight sector.

The Amber Middle Marker light illuminates when passing the Middle Marker on Approach.

The Blue Outer Marker light illuminates when passing the Outer Marker on Approach.

Pressing the TEST button illuminates all of the marker lights.

Each of the Marker lights is accompanied by a sound.

## The Engine Rating Indicators



These lights illuminate at a corresponding phase of the flight.

The CTY light flashes when speed exceeds 80 knots at takeoff until the aircraft is 50 feet off the ground.

The T/O light illuminates during Takeoff at the same time as the CTY light.

The CLB light illuminates when the aircraft radio height exceeds 50 feet until it approaches cruising altitude.

The CRS light illuminates when at cruising altitude until descent commences.

# CONCORDE

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## The Centre of Gravity Indicator



The white marker on the left shows the current Centre of Gravity (CG) position.

The yellow markers on the right show the maximum and minimum permitted position for the CG.

## The Cabin Altitude Indicator



This gauge displays the Cabin pressurisation altitude in thousands of feet.

## ***Hidden Functions***

As noted elsewhere clicking on the knob of the two Yokes makes the Yokes disappear and the full instrument panel visible. The same Yoke knob areas can be used with the mouse wheel to adjust the eyepoint up and down.

# CONCORDE

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## ***The Automatic Flight Control System (AFCS)***



The AFCS is located on the Glareshield above the Centre Panel. From left to right the controls are described as follows:

### **The Auto Land Light**



The Autoland light illuminates when the Autoland button is pressed on the central glareshield.

### **The NAV 1 and NAV 2 Radios**



The NAV 1 and NAV 2 radios display the currently tuned frequency for the radio. The frequency can be adjusted by rotating the knobs using the Mouse Wheel.



# CONCORDE

## The AFCS or Autopilot



The AFCS does not have a detailed explanation of its functions on the Heritage Concorde website so some guesswork has been involved to define the functions of the various controls. Buttons and their functions from left to right are:

| AUTOPILOT           |   |  |
|---------------------|---|--|
| Switch              | Function  | Action   |
| MACH HOLD           | At speeds over Mach 0.5 Mach hold mode is switched on or off                        | Click for On and again for Off.  |
| IAS HOLD            | Activates Airspeed Hold mode at the airspeed shown in the Captain's Display window. | Click for on and again for off. Only operates once the Autothrottle has been armed.      |
| IAS ACQ             | Illuminates when the aircraft is within 20 knots of the selected airspeed           | No action  |
| AT1 and AT2         | Switching both levers arms the Autothrottle.  | Click once to engage and once to disengage.  |
| Autothrottle Window | Displays selected Airspeed  |  |
| Speed Select Knob   | Select Airspeed for the Autothrottle  | Use the Left and Right Mouse buttons to rotate the speed window to the desired Airspeed. |
| INS                 | Activate Inertial Navigation Mode (INS) for Lateral Navigation.                     | FSX does not support INS however pressing this button activates GPS mode for navigation. |
| BACK BEAM           | Activates localizer back course hold mode   | Click once to engage and once to disengage.  |
| FD 1 Lever          | Engage Flight Director. Also disengages MAX CLIMB and HDG HOLD.                     | Click once to engage and again to disengage.   |
| TRK HDG             | On the real aircraft: activates Track Heading Mode on the real aircraft.            | FSX does not support Track heading so this button is inoperative.                        |
| VOR LOC             | Activates Approach Hold Mode to the Localizer                                       | Click once to engage and again to disengage.   |

# CONCORDE

| <b>AUTOPILOT (continued)</b> |   |   |
|------------------------------|---|---|
| <b>Switch</b>                | <b>Function</b>   | <b>Action</b>   |
| Heading Window               | Displays selected Heading   | No action   |
| Heading Knob                 | Rotate the knob to select the desired heading in the heading window.                | Use the Left and Right Mouse buttons to rotate the heading to that desired. Centre click will activate HDG HOLD mode. |
| HDG HOLD                     | Switch on Heading Hold Mode.  | Click once to engage and again to disengage HDG HOLD mode..   |
| AUTOLAND                     | Switch on Auto Land Light and also switch on Automatic Braking for landing.         | Click once to engage and again to disengage.  |
| VOR 1 Course Window          | Displays OBS 1 Course to VOR 1  | No action   |
| VOR 1 Course Knob            | Rotate the knob to select the desired course for VOR 1                              | Use the mouse wheel to rotate the knob to the desired course.   |
| TURB                         | Unable to determine function of this button.  | Inactive  |
| GO AROUND                    | Switch on to select Go Around Power   | Click once to engage and again to disengage.  |
| AP 1 and AP 2                | Master Switch for the Autopilot. Switching on both switches on the Autopilot.       | Click once to engage and again to disengage.  |
| PITCH HOLD                   | Activates Attitude Hold Mode  | Click once to engage and again to disengage.  |
| LAND                         | Switches on Approach Hold Mode.   | Click once to engage and again to disengage.  |
| MACH HOLD                    | At speeds over Mach 0.5 Mach hold mode is switched on or off                        | Click once to engage and again to disengage.  |
| GLIDE                        | This light illuminates when the Glideslope is captured.                             |   |
| Heading Window               | Displays selected Heading   |   |
| Heading Knob                 | Rotate the knob to select the desired heading in the heading window.                | Use the Left and right mouse buttons to rotate the heading to that desired.   |
| MAX CLIMB                    | Set the Vertical Speed to 5000 feet per minute (Maximum climb rate)                 | Click once to engage VS and again to return VS to zero.   |
| MAX CRUISE                   | Set the maximum cruise speed of Mach 2.02   | Click once to set to Mach 2.02. Click again will set to Mach 1.   |
| IAS HOLD                     | Activates Airspeed Hold mode at the airspeed shown in the Captain's Display window. | Click for on and again for off. Only operates once the Autothrottle has been armed.                                   |

# CONCORDE

| AUTOPILOT (continued) |  |  |
|-----------------------|--|--|
| Switch                | Function   | Action   |
| VERT SPEED            | Sets vertical speed to 2000 feet per minute (Ascending or descending).                     | Click once to set VS to 2000. Click again sets VS to zero.                               |
| ALT HOLD              | Activates Altitude Hold mode at the altitude shown in the FO's Display window.             | Click once to activate   |
| ALT ACQ               | Light illuminates when Altitude hold is active and the selected altitude has been reached. |  |
| FD 2 Lever            | Engage Flight Director   | Click once to engage and again to disengage.   |
| Autothrottle Window   | Displays selected Airspeed   |  |
| Altitude Select Knob  | Select Altitude for Altitude Hold  | Use the Left and Right Mouse buttons to rotate the speed window to the desired Airspeed. |

## *The Compass*



The Compass appears above the Glareshield. To assist with landing and general visibility it can be switched off by clicking on the  Icon.

# CONCORDE

## *The Centre Panel*



# CONCORDE

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## **The Brake Pressure Indicator**



This gauge displays the Brake dependent Hydraulic pressure. In FSX both left and right are the same.

## **The Brake Warning Lights**



These lights do not operate in FSX.

# CONCORDE

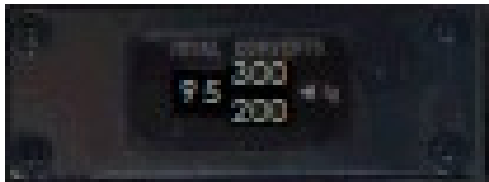
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## **The Takeoff Monitor Control Button**



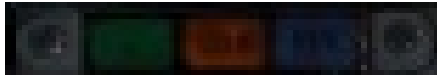
These knobs do not operate in FSX. Used for monitoring engine thrust during takeoff in the real aircraft.

## **The Fuel Contents Indicator**



Displays the Total Fuel contents in kilograms.

## **The Power Management Lights**



For each engine there are three power management lights.

The first green light is the Clear to Go light and illuminates when the Engine N1 is increased to over 80% while on the ground.

The second Amber light illuminates when the Afterburner is active while on the ground.

The third blue light is illuminated when the reverser is deployed.



# CONCORDE

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## The Engine Monitoring Indicators



Each engine has five indicators: N2, N1, Fuel Flow, EGT, and Area

The N2 Indicator shows the percentage of rpm of the high pressure spool both on the dial and the digital counter.

The N1 Indicator shows the percentage of rpm of the low pressure spool both on the dial and the digital counter.

The Fuel Flow Indicator displays the fuel flow rate in kilograms per hour X 1000. The fuel flow bug and counter can be adjusted using the mouse wheel on the knob at the bottom right. This adjustment has no effect in FSX.

The Exhaust Gas Temperature (EGT) Indicator shows the EGT in 100s of degrees centigrade.

In FSX this shows the percentage active of the afterburner. On the real aircraft it actually indicates the primary nozzle exhaust gas discharge area as a percentage of the range between the minimum and maximum area.

# CONCORDE

## The INS Control Panels



The settings of the two forward INSs on the Pedestal are visible and adjustable on the main panel. For a full description of the settings refer to The Pedestal chapter.

## ***The First Officer's Panel***

Many of the gauges on the First Officer's panel are copies of gauges on the Captain's Panel however there are quite number of new gauges on this panel. This section will describe only those instruments which do not appear on the Captain's panel.



# CONCORDE

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## The Wheels Overheat Light



On the real aircraft the Wheels Overheat light illuminates when the brake temperature exceeds 220° C. FSX does not support brake temperature so this light is inoperative.

## The Landing Gear Panel



Clicking on the Landing Gear Lever will raise or lower the Landing Gear. On the real aircraft there is also a Neutral position which prevents lowering the Landing Gear in supersonic flight however this is not modelled.

# CONCORDE

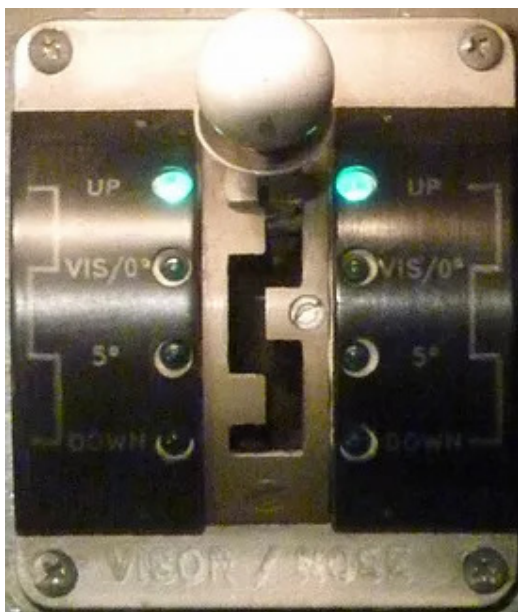
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## The Gear Override Switch



On the real aircraft the Gear Override Switch overrides the safety feature between Neutral and UP position. IN FSX it is inoperative.

## The Nose Position Selector



The Nose position selector seems out of place since it is a different colouring than any of the other instruments. Nevertheless this is how it appears on the real aircraft. It lowers and raises the nose cone to one of three positions: Visor Down Nose Up, Nose 5 degrees down, Nose fully Down.

# CONCORDE

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The lever has been made deliberately complicated to operate as on the real aircraft due to its zigzag movement.

It should be operated as follows:

|                                       |                                    |
|---------------------------------------|------------------------------------|
| To move from Visor Up to Visor Down:  | Right click twice                  |
| To move from Visor Down to 5 degrees: | Left click twice                   |
| To move from 5 degrees to fully down: | Right click twice, left click once |
| To move from fully down to 5 degrees: | Right click twice, left click once |
| To move from 5 degrees to visor down: | Left click then right click        |
| To move from visor down to Visor Up:  | Right click then left click        |

The nose can also be operated using the FSX flap controls however if these controls are used the Nose Position Selector will not move although the nose indicator lights will illuminate at the correct position.

Note that using the Mouse wheel the view through the window can be adjusted up and down by positioning the mouse anywhere on the Visor frame.

## **The Visor Panel**



This panel indicates the status of the nose.

The red light at the top illuminates when the Visor is in transit.

The amber light in the middle illuminates when the nose cone is in transit.

The green light at the bottom illuminates when the Nose cone is fully extended.

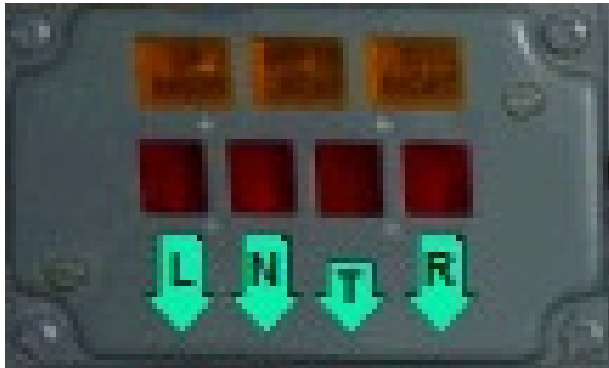
The Visor window Displays UP when the Visor is Up, DOWN when the visor is down and diagonal white lines when the Visor is in transit.

The Wiper Override switch when in the Normal position stops the nose from being raised if the windscreen wipers are not parked. Override is used to bypass this inhibition. In FSX the switch has no effect.

# CONCORDE

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## The Landing Gear Indicators



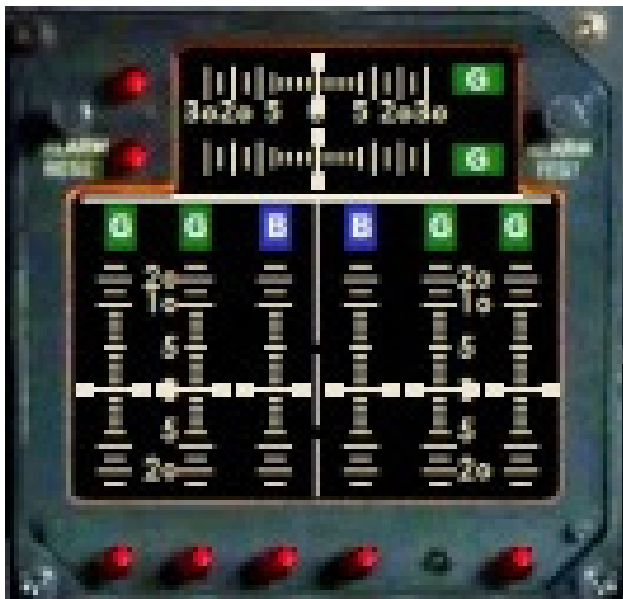
The Landing Gear Indicators indicate the status of the Landing Gear.

The Amber lights on top are illuminated when the gear is unlocked during the landing phase. These will come on while the gear is in transit.

The Red lights in the second row are illuminated when the left, Nose, Tail, and Right Landing gears respectively are in transit.

The Green lights at the bottom are illuminated when the Left, Nose, Tail, and Right Landing Gear respectively is down and locked.

## The ICOVOL Indicator



This is a gauge that appears unique to Concorde. It indicates the position of the various control surfaces with the 2-part rudder at the top and the Elevons represented below.

The first two and last two columns represent the deflection of the Ailerons in FSX terms but indicate the middle and outer Elevons on the real Concorde. The middle two columns represent the Elevators in FSX terms and the Inner Elevons on Concorde.



# CONCORDE

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The coloured flags on each of the columns and rudder rows can be one of G (Green), B (Blue), Y (Yellow), or M (Red). The formula for calculating which flag to display is complex however basically G and B represent the Green and Blue Hydraulic system while Y represents the backup Hydraulic system and usually only occurs at startup. An M indication represents mechanical control.

The red warning lights illuminate when the coloured flags change. This always occurs at startup when the indications change from Y to B and G. The red lights can be set off by clicking on the reset button at the top left.

Clicking on the TEST button at the top left illuminates all the warning lights. Note the missing bulb on column 5. This is consistent with the real aircraft and has not been replaced.

## **The Anti Skid Indicator**



The Anti Skid Indicator shows the state of the Anti-Skid System.

The amber lights at the top illuminate when the Anti Skid system is on which happens automatically when the Landing Gear is lowered. On the real aircraft it actually comes on when the anti-skid releases the brakes so would flash on and off during braking.

## **Other Gauges**

All other Gauges on the First Officer's Panel are duplicates of gauges on the Captain's Panel. Refer to the Captain's Panel for details of those gauges.



# CONCORDE



Overhead Panel 3

# CONCORDE

## **Overhead Panel 1**

### **The External Lights and De-Ice Controls Panel**



The switches and lights on this panel operate as follows from left to right:

| <b>EXTERNAL LIGHTS and DEICE CONTROLS</b> |   |   |
|---|---|---|
| <b>Switch</b>                             | <b>Function</b>   | <b>Action</b>   |
| Deice Shutters                            | Displays a Horizontal line if Windshield Heat is on or diagonal white lines when off. |   |
| EXTEND LL (L & R)                         | Extends the Landing Lights  | Click to Extend Landing Light                                     |
| LANDING LIGHTS (L & R)                    | Switches on Landing Lights  | Click to switch Landing Lights on or off. Must be extended first. |
| WINDSHIELD HEAT (L & R)                   | Switches on Windshield Heat   | Click to switch Windshield Heat on.                               |
| VISOR DE-ICE (L & R)                      | Switches on Visor De-Ice  | Click to switch Visor De-Ice On or Off                            |
| SIDE WINDOW DEMIST (L & R)                | Switches on Sliding Side Window demist heater   | Click to switch Side Window demist heater on or off               |
| EXTEND TAXI LIGHTS (L & R)                | Extends the Taxi Lights   | Click to extend Taxi Lights                                       |
| TAXI LIGHTS (L & R)                       | Switches on Taxi Lights   | Click to switch Taxi Lights On or off                             |

# CONCORDE

## The Annunciator Panel



Annunciators illuminate as described in the following table (from left to right):

| ANNUNCIATOR PANEL |   |  |
|-------------------|---|--|
| Switch            | Real Aircraft   | FSX  |
| FEEL              | Artificial feel failure   | Inoperative  |
| INS               | Los of inertial information to the AFCS   | Inoperative  |
| NAV               | Discrepancy in positions indicated by INS channels  | Inoperative  |
| ADS               | ADS discrepancy VC warning altitude and incidence   | Inoperative  |
| ADC               | ADC Failure   | Inoperative  |
| STAB              | Auto-stabiliser failure in any axis   | Inoperative  |
| TRIM              | Electric trim failure of both channels  | Inoperative  |
| CG                | Centre of Gravity out of range  | Centre of Gravity out of range                             |
| AIR               | Primary Heat Exchanger Overheat   | A forward extractor fan is off                             |
| ENG 1-4<br>RED    | Engine Fire or<br>Turbine cooling air failure or<br>Bearing labyrinth temperature or<br>Engine Wind down or<br>No. 1 bearing vertical vibration or<br>Flame detected & No. 4 bearing fail or<br>Engine low oil pressure | Engine off or<br>Engine fire or<br>Engine low oil pressure |
| ENG 1-4<br>AMBER  | Nacelle Wing Overheat or<br>Fire warning loop failure or<br>Oil overheat or<br>Oil Level or<br>Fuel Temperature or<br>Engine gear box oil low pressure  | Oil Level or<br>Fuel Temperature less than -40° C          |
| THROT             | Throttle failure on throttles selected OFF with HP cocks selected OPEN.   | Inoperative  |
| FUEL              | Fuel delivery pressure low or<br>Collector tanks low or<br>Fuel leak over engine bays or<br>Fuel tank pressurisation  | Fuel Pressure low or<br>Collector Tanks low                |
| HYD               | Pump Low Pressure or<br>Tank Low Level or<br>Tank Overheat  | Low Hydraulic Pressure                                     |

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| ANNUNCIATOR PANEL (continued) |   |  |
|-------------------------------|---|--|
| Switch                        | Real Aircraft   | FSX  |
| PRESS                         | Cabin Pressure excessive<br>Cabin Altitude excessive  | Cabin Pressure excessive<br>Cabin Altitude over 10,000 feet      |
| ELEC<br>RED                   | DC busbar failure or<br>Emergency generator overheat or<br>AC Essential busbar failure  | Inoperative  |
| ELEC<br>AMBER                 | CSD Failure or<br>AC main busbar failure or<br>DC main busbar failure or<br>Battery isolated or<br>TRU Overheat or<br>Generator failure | AC Main Bus Off or<br>DC Main bus Off or<br>Engine Generator off |
| RADN                          | Excessive radiation detected  | Inoperative  |
| DOORS                         | Door is unlocked  | Door is open   |
| SMOKE                         | Smoke Detected  | Inoperative  |
| ICE                           | Ice detected with de-icing off  | Ice detected with de-icing off                                   |

## **Overhead Panel 2**

### **The Engine Shutdown and Fire Control Panel**



This panel has the fire handles for each of the four engines.

A fire handle will illuminate when the engine is running and either:

- Engine is on fire or
- Engine Oil Pressure is low or
- EGT is greater than 640° C

When a fire handle illuminates it can be pulled by clicking on it then to discharge the fire bottles, click on the buttons to left and right of the fire handle.

Pulling the fire handle will take the following actions:

- Throttle is cut
- Fuel feed valve is closed
- Electric Fuel Pump is cut
- Afterburner is cut if active



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## **The Artificial Feel, Auto Stability & Electric Trim Panel**



In the real aircraft these switches enable an “Artificial Feel” mode as well as providing an Auto Stabilizer and Electric Trim. In FSX none of these features can be modelled so this panel is inoperative.

## ***Overhead Panel 3***

The third Overhead Panel is actually located on the roof on the real aircraft but in the 2D panel it displays lower down. In the VC it displays in the correct position and works the same as described here.

Below are described the various sub-panels on the roof panel:

## **The Cockpit Door Panel**



In the real aircraft this panel was used to lock the cockpit door. In FSX this panel is inoperative.

## **The Seat Belts Panel**



As on the real aircraft these switches operate the Fasten Seat Belts and No Smoking signs accompanied by an audio chime.



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## The Emergency Evacuation Panel



On the real aircraft this switch activates EMERG EVAC lights at the vestibules throughout the aircraft.

In FSX click the switch once to arm the system then right click to switch on the flashing EMERG EVAC light above the switch. Clicking on the CANCEL button returns the switch to ARMED and switches off the light.

## The Lighting Panel



On the real aircraft these dials are used to switch on the various panel lights in the cockpit. In FSX clicking on any of these dials will switch on the FSX lighting as they also will on the corresponding panel on the Flight Officer's side.

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## The Hydraulic Servo Control Panel



On the real aircraft this Hydraulic Control Panel allows the pilot to change the configuration of the Hydraulic control system in the event of a PFCU jam fault.

In FSX the function is simulated although it has no effect on the Hydraulic system. Operation of the dials will result in changes to the configuration shown on the ICOVOL instrument on the First Officer's panel. The combinations are complex but they are described in detail on the <https://www.heritageconcorde.com/overhead-panel-aft> website and the operation of these knobs is based on that description.

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## The Lights Panel



As on the real aircraft these switches turn the external lights on or off.

In FSX they work as follows:

- ROOF: Switches on the FSX Panel Lighting
- EMERG: Switches the variable (L:Emergency Light Switch, bool) otherwise has no effect
- ANTI-COLN: Switches the Strobe Lights on or off
- NAV: Switches the Navigation Lights on or off
- LIGHTS: Tests the lights on this panel

## The Engine Flight Rating Panel



On the real aircraft the Engine Flight Rating switches limit the N1, N2 and EGT to the CLIMB rating when up and limits the same parameters to the CRUISE rating when down. All switches operate simultaneously with the bar. In FSX these switches have no effect.

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## The Drain Mast Anti-Ice Panel



On the real aircraft the switches switch on the Drain Mast Heater and the corresponding light illuminates when on.

FSX also illuminates the corresponding MAST light but the switch performs no function.

## The Throttle Master Switches



On the real aircraft the Throttle Master switches can switch the throttle control system to an alternate system.

In FSX although the switches operate and the lights come on when testing the lights, they perform no function.

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## **The Auto Ignition Switches**



The Auto Ignition switches arm the Auto-Ignition system on the real aircraft.

In FSX these switches are operated simultaneous with the bar and have no effect.

## **The Auto Throttle Switches**



These switches arm the Autothrottles on the real aircraft and in FSX. In FSX there is no individual autothrottle for each engine so any one switch will activate the autothrottle.

## **The Engine Rating Mode Switches**



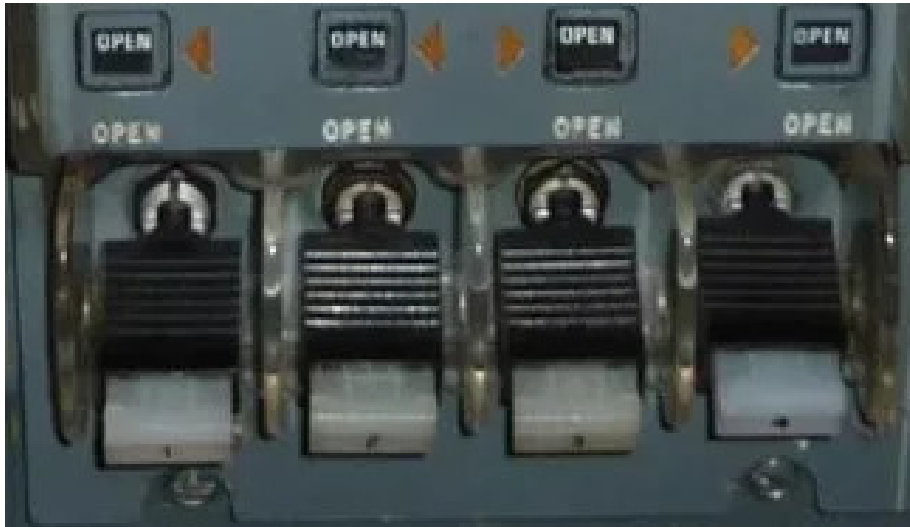
On the real aircraft when set to TAKEOFF N1, N2, and EGT will be limited to the take-off rating. When set to FLIGHT the Engine Flight ratings are armed. When landing gear is lowered the switches are spring loaded to return to TAKEOFF.

In FSX the switches can be set to FLIGHT when the landing gear is retracted but they do not have any effect on the simulation.

# CONCORDE

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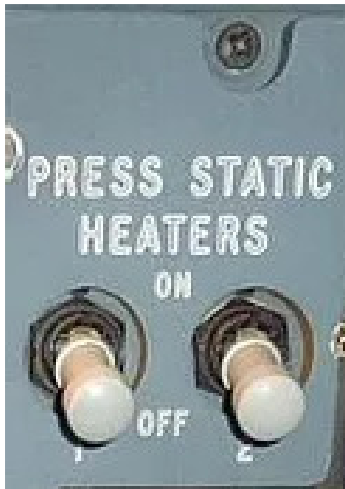
## The Engine Fuel Valve Switches



On both the real aircraft and in FSX these switches open and close the Engine fuel valves.

Click once to close and again to open. Note that if you close the fuel valve the engine will shut down.

## The Static Heaters Switches



On the real aircraft these Pressurisation Static Heater switches prevent ice build-up on the pressurisation vents/intakes.

In FSX these switches have no effect.

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## The Air Data System Anti-Ice Panel



On the real aircraft the ADS 1 and ADS 2 switches control the heaters on the Pitot probe, the static sensor heaters S, the angle of attack sensor heaters  $\alpha$ , the sideslip sensor heaters  $\beta$  and the total air temperature sensor heaters T<sub>x</sub>. These heaters operate only when the total air temperature is below 15°C.

In FSX switching on ADS 1 or ADS 2 will switch on the Pitot heater. The Standby Pitot heat switch is a dummy switch. The lights will illuminate however corresponding to the lights which would illuminate on the real aircraft.

Clicking on the TEST button illuminates all the lights.

## The Engine Anti-Ice Panel



On both the real aircraft and the FSX version these switches switch on the Engine Anti-Ice heated air. The green light illuminates to indicate that the Engine Anti-ice system is switched on.



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## The Wing and Intake Anti-Ice Panel



On the real aircraft the bottom left knob switches on the Wing Anti-icing system with pulses of the duration shown on the dial. The left knob activates the main system and the right bottom knob activates the alternate system. The centre top knob initiates tests of the anti-ice system according to its setting.

In FSX the knobs are rotated with the left and right mouse buttons. Any position other than OFF for the bottom two knobs will activate wing de-icing. The centre TEST knob will switch on the corresponding test light however performs no other function.

In both the real and the FSX aircraft illumination of the left or right blue lights indicates icing on the respective wing while illumination of the centre red light indicates wing icing with the de-icing system is off.

Note that the de-icing system will not operate if the total air temperature is more than 15° C.

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## The Relay Jack Panel



On the real aircraft the switch on the left can be used to switch the Hydraulic system to work only from either the Green or Blue system. In the NORMAL position the hydraulic system is split between the two systems. The two red lights when illuminated indicate a jam in the respective system. The two test buttons on the right test the Blue and Green Jam warning lights respectively.

In FSX the switch can be operated with left click for down and right click for up. When switched up the Green Jam light illuminates. When switched down the Blue Jam light illuminates. The test buttons on the right illuminate the Blue and Green Jam lights respectively. Other than the lights the switch performs no function.

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## *The Pedestal*



Note that on the 2D view shown above the forward part of the Pedestal can not be seen but on the VC view below the forward part can mostly be seen although partially blocked by the armrest. On the VC the two INS systems and the temperature gauge are working as well as the partially concealed Cabin Display Mach and temperature gauge.

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For the lower part of the Pedestal the 2D view is complete but the VC view is partly obscured as below:



All the functions on both 2D and VC however work in the same way.



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## The INS Control Panels



There are three INS panels: two on the forward part of the Pedestal and one on the rear part of the Pedestal. The two INSs visible on the main panel are not visible on the 2D Pedestal but can be clearly seen on the VC view of the Pedestal. The third INS can be seen on both the 2D and the VC pedestal. Each of these INSs can have different displays set.

The displays can be adjusted by clicking on the large knob at left bottom. For the panels visible on the main panel the knob is not animated but on the 2D and VC pedestals the knob is animated.

The settings are as follows:

WAY PT Setting (Default): Displays the last and next waypoint from the Flight Plan

### **Anticlockwise (Left Mouse Button)**

- |                  |   |
|------------------|---|
| POS Setting:     | Displays the current Latitude and Longitude of the aircraft                     |
| XTK TKE Setting: | Displays the cross track in nautical miles and the Track Angle error in degrees |
| HDG/DA Setting:  | Displays the Magnetic Heading in degrees and the Drift Angle in degrees         |
| TK/GS Setting:   | Displays the Ground Magnetic Track and Ground Speed in knots.                   |

### **Clockwise (Right Mouse Button)**

- |                    |  |
|--------------------|--|
| TIME Setting:      | Displays distance to the next Waypoint in nautical miles and estimated time to next Waypoint in minutes. |
| WIND Setting:      | Displays Wind direction in degrees and Wind speed in knots.  |
| DSRTK/STS Setting: | Displays the Drift Angle in degrees and the System Status which is always OK.                            |

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## The Passenger Cabin Data Entry Panel



On the real aircraft the pilot manually enters the Mach speed, Altitude, Outside Temperature and Ground Speed for display in the Passenger Cabin.

In FSX this panel is only partially visible on the VC and is not visible on the 2D panel. It displays the data from the aircraft data and does not allow changes to the data. The data shown on this panel does also display on the Passenger Cabin view selectable from the Icons.

## The Temperature Gauge



This gauge is visible only on the VC panel. It displays the Total Air Temperature, the Static Air Temperature and the ISA Temperature on both the real aircraft and in FSX.

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## The Trim Knobs



Use the left and right mouse buttons to rotate the Yaw Trim knob. Unfortunately the Concorde model always returns the trim to zero. The Yaw Trim therefore has no effect on the trim. Centre click returns the trim to zero.

Pitch trim can be adjusted using the Mouse wheel on the Pitch trim wheel. The wheel is not animated however the setting can be seen on the scale. Centre click returns the Trim to zero.

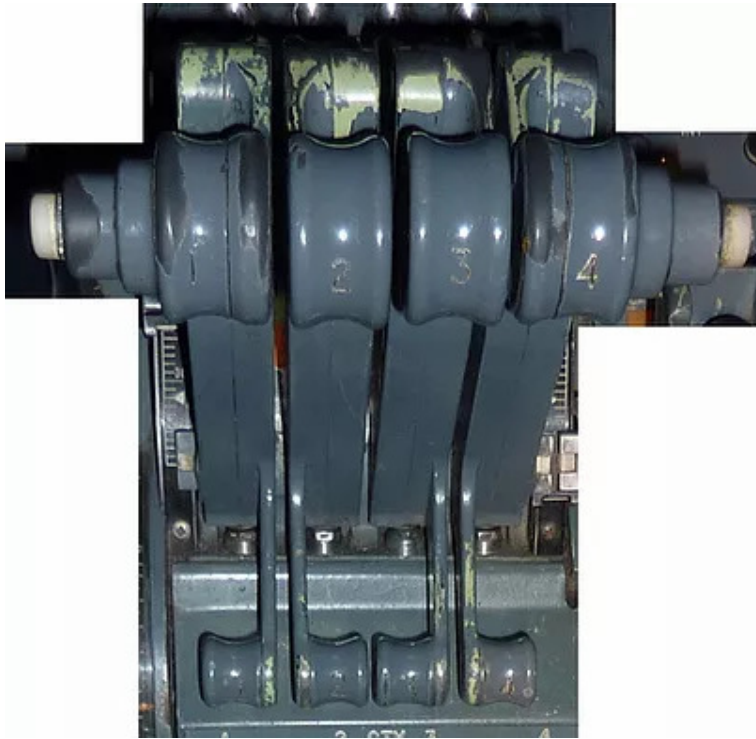
Use the left and right mouse buttons to rotate the Roll Trim knob. Centre click returns the trim to zero.



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## The Throttle Levers



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 levers are not entirely realistic as the reverser levers do not animate but the levers continue to move down for reverse thrust.

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Note that when you centre click for reverse thrust the red lever to the right (the Baulk Override Handle) will rotate to the right to signify that the reverse thrust levers are unlocked. The Baulk Override Handle can also be clicked to unlock reversers instead of the centre click however this does not work well on the 2D panel due to proximity to the brake lever.

On the VC the Throttle levers do not animate at all and each individual lever must be adjusted using the mouse wheel. This is built in to the model and can not be changed. It is not recommended to use the VC Throttle levers to control the aircraft.

The use of the mouse wheel is fairly smooth however note that each click of the mouse 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).

## **The Rain Dispersal and Baulk Override Handle**



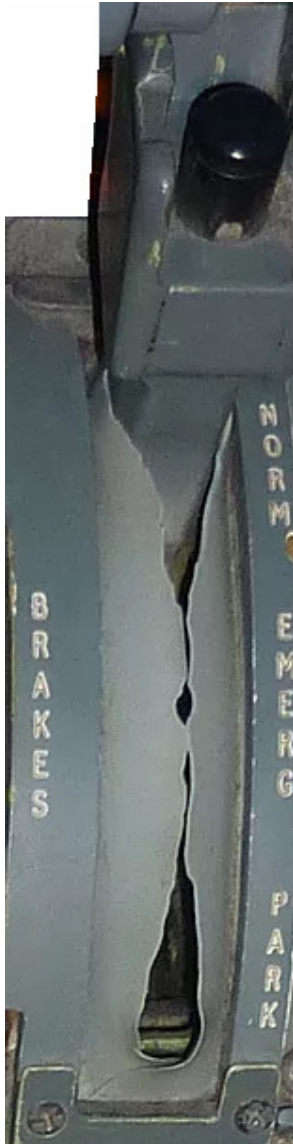
The knobs on the right control the windscreen wipers but are inoperative in FSX.

The red Baulk Override Handle on the left rotates right when the reverser levers are unlocked. It can also be clicked on to unlock the reversers but this only works well on the VC panel.

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## The Parking Brake Lever



The Parking Brake Lever has three positions: NORM, EMERG, and PARK. FSX works in the same way as the real aircraft.

At the NORM position the Parking Brakes are released and Anti-Skid for aircraft braking is on.

At the EMERG position Anti-skid for aircraft braking is switched off but the Parking Brake is not on.

At the PARK position the Parking Brake is on.

The lever can be moved down first by clicking on the button with either mouse button then clicking left to move the lever down or right to move the lever up.

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## The Standby Nose Visor Panel



On the real aircraft the nose and visor standby system will lower the nose to 12.5° using the yellow hydraulic system. This can only be done once for landing and the nose can not be raised again. It must be reset when the aircraft is on the ground.

In FSX this panel is inoperative.

## The Radio Panels



On the Pedestal there are two radio panels side by side. The left panel displays NAV 1 and COMM 1 frequencies. The right panel displays NAV2 and COMM 2 frequencies. Note that Concorde does not have standby radios so these are the active radio frequencies. The NAV radio frequencies match the radio frequencies displayed on the main panel.

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The selected radio is indicated by the green light at the top. The frequency for the selected radio can be changed using the left and right mouse buttons on the two knobs below the radio. The left knob rotates the whole numbers while the right dial rotates the decimals.

## The Weather Radar Control Panel



As there is no weather radar fitted to this aircraft the weather radar control panel is redundant and is inoperative in FSX.

## The Transponder Panel



The Transponder panel displays the Transponder code and allows keying in a new Transponder code using the keys on the panel keyboard. When typing in a new code the new numbers appear in yellow and do not become the new code until the IDNT key is pressed. In order to cancel what has been typed use the CLR key to backspace.

Other knobs on this panel are inoperative.

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## The ADF Tuner Panel



The ADF Tuner displays the frequencies for ADF 1 and ADF 2. Frequencies can be changed using the left and right mouse buttons on the respective knobs for each ADF.

## The HF Tuner Panel



This panel displays HF frequencies however FSX does not support HF radios so these frequencies are dummy frequencies. Nevertheless they can be rotated with the left and right mouse keys on the corresponding knobs. The adjusting knobs at the bottom also operate adjusting to AM or SSB frequencies. None of the keys on this panel have any effect in the simulation.



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## The Air Data Systems Panel



On the real aircraft the switches switch on the Air Data Computer and the failure indications are armed. The lights at the top indicate a fault in the Air Data system. The knobs are used to test the overspeed warning system, stall warning system, the ADC monitoring system, and the comparator system.

In FSX the switches operate but perform no function. Rotating either of the test knobs illuminates the TEST light.

## The Lighting Test Panel



Clicking on the Lights Test switch on the right tests all of the lights on the Pedestal.



# CONCORDE

## *The GPS Panel*



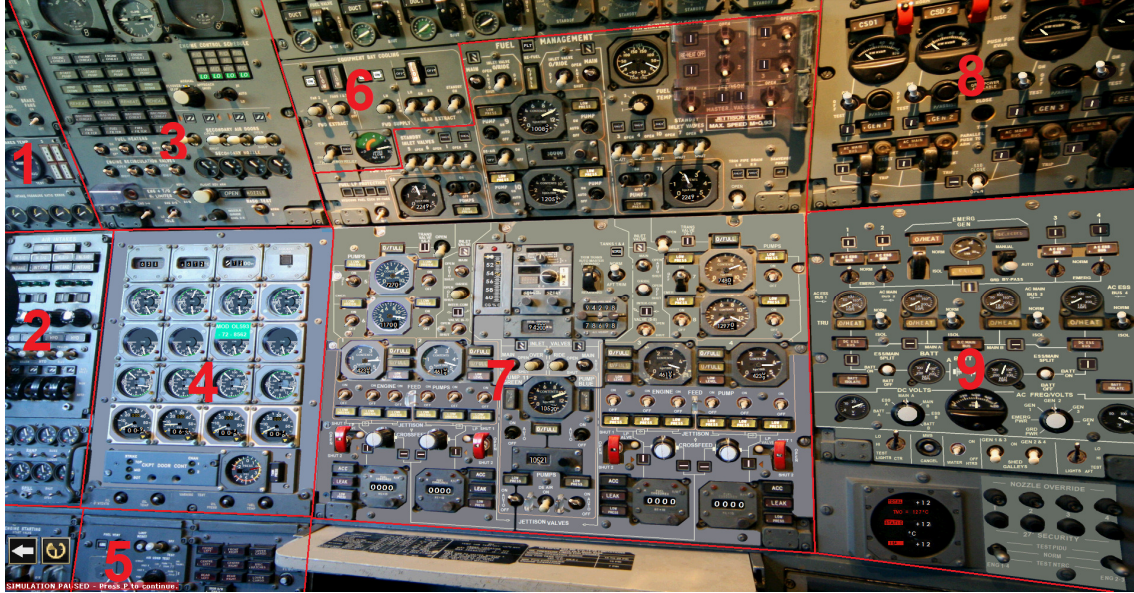
Concorde did not have GPS – it used the INS navigation system. This GPS panel is provided as a convenience for FSX users but is not authentic. FSX simulates the INS system using the GPS and the INS gauges can be used to navigate the aircraft without the GPS for an authentic experience.

On the real aircraft much of the information from the GPS would have been carried in paper form.


Instructions on how to use this GPS system are provided in a separate GPS Manual.

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## *The Flight Engineer's Panel*




The Flight Engineer's panel is the most complex panel in the aircraft. Much of the panel is taken up with the hugely complex Fuel Management System on Panel 7 which is described in a chapter on its own.

Due to lack of artwork this aircraft does not include all of the panel so unfortunately some functions can not be reproduced. The Engine Start panel however which occurs below the left of the desk is reproduced as a pop-up panel and represented by the  icon

Note that the Flight Engineer's Panel is not available in the VC.

In order to help find the location of switches the sub-panels in the Flight Engineer's Panel have been numbered as shown above.



Clicking on the  Icon returns to the main panel.

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## **Panel 1**

### **The Lighting Test Switch**



Located mid-way on Panel 1 clicking on this switch illuminates all lights on panels 2, 3, 4, and 5.

### **The Brake Fans Switch**



On the real aircraft this switches on the brake cooling fans. It performs no function in FSX.

### **The Brake Temperature Gauge Sub-Panel**



On the real aircraft this displays the brakes temperature together with warning lights if the temperature exceeds 220° C. FSX does not measure brakes temperature so this sub-panel is inoperative.

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## The Intake Pressure Ratio Error Gauges



On the real aircraft these gauges measure the intake status at speeds above Mach 1.3 after an intake control failure. The pointer shows the direction to move each throttle to match engine intakes. When the pointer is between the yellow bands the intakes are correct.

In FSX the pointers point to zero when the engines are shut down and point between the yellow bands when the engine is running.

## *Panel 2*

### The Air Intake Panel



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On the real aircraft:

- The  $\alpha$  light signifies a failure of the aircraft incidence signal on one of the intake control units.
- The N1 SIG lights indicate a failure of the low pressure spool speed signal on the intake control unit
- The INTAKE light indicate that the spill door ramp and spill doors are not controlled by the air intake automatic control system
- The LANE IN USE green lights indicate which air intake lane is in use for each engine.
- The LANE Lights indicate a failure of the associated air intake lane
- The LANE Rotary selector allows the manual selection of the air intake lane.

In FSX there is no support for air intake control so the functions on this panel are greatly simplified.

- The  $\alpha$  light illuminates when one engine is shut down
- The N1 SIG lights illuminate when the selected engine N1 is less than 40%
- The INTAKE lights illuminate when the respective engine is completely shut down
- The LANE IN USE Lane A lights illuminate at startup
- The LANE lights are inoperative
- The LANE Rotary Selector allows switching between Lane A to Lane B using the left and right mouse buttons. They have no effect on the simulation.

## The Hydraulic Panel



On the real aircraft this panel performs the following functions:

- The HYD lights illuminate when there is a failure of the hydraulic activation of the air intake.
- The Hydraulic Selector Switches allow the manual selection of either Yellow Hydraulic System or the Green or Blue Systems from Auto
- The function of the AUX INLET MI Shutters at the bottom is unclear

In FSX there is no air intake activation so these are dummy switches. Left click to switch down and right switch to switch up. When the switch is set up to Yellow the respective HYD light illuminates and The AUX INLET Shutter switches from SHUT to OPEN



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## The Ramp/Spill Master Switches



On the real aircraft:

- The Ramp/Spill master switches at the top allow switching from automatic air intake ramp management to manual ramp management.
- When Manual ramp management is selected the small switches below the ramp indicator can be used raise and lower the ramp position inch by inch as indicated on the Ramp Indicator above.
- Similarly the second row of switches allow the adjustment of the Spill ramp inch by inch as shown on the Spill Ramp Indicator

As the Ramp/Spill Master Switches are inoperative in FSX the ramp and spill adjustment are not available.

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## **Panel 3**

Unfortunately only the bottom 2 dials of the Cabin Pressure Control panel are visible. This is not such a big problem as the missing gauges control the Cabin Pressure when ditching in water and the Cabin pressure differential gauges which are not essential.

The visible gauges are fortunately the most useful ones.

## **The Selected Altitude Gauges**



There are two Selected Altitude Gauges for two different systems which can be selected with switches that are not visible.

Since it can not be switched only the left System A is activated in FSX. The selected altitude can be adjusted by rotating the left A knob using the left and right mouse buttons. The B knob on the right adjusted the barometric pressure.

## **The Cabin Rate of Climb Indicator**



The Cabin Rate of Climb Indicator displays the rate of change of Cabin Pressure in thousands of feet per minute.



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## The Engine Control Warning Lights



On the real aircraft these warning lights illuminate for each of the four engines as follows:

- ENGINE O/HEAT: Engine has overheated possibly due to fire
- START PUMP: An electrically driven fuel start pump is running
- WIND DOWN: The Wind Down System is operating
- REHEAT: A fault in the Reheat system
- NAC/WING O/HEAT: Possible fire
- FUEL FILTER: Excess differential pressure across the engine fuel filter

In FSX these lights illuminate in the following cases:

- ENGINE O/HEAT: EGT exceeds 850° C or Engine on Fire
- START PUMP: Fuel Pump is on
- WIND DOWN: Does not function
- REHEAT: Does not function
- NAC/WING O/HEAT: Engine on Fire
- FUEL FILTER: Does not function

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## The Engine Control Schedule Lights



FSX functionality for these lights is the same as for the real aircraft. In FSX however the settings have no effect on the simulation. The switching of the lights is complicated however the following describes how they illuminate:

Regardless of the setting of the rotary selector or the Engine Control Switch, when the aircraft is on the ground the LO lights will illuminate.

| Switch Setting | Condition                                 | Light Setting |
|----------------|---|---------------|
| HI             | Landing Gear Down                         | LO            |
| HI             | Landing Gear Up<br>Take Off Flight Phase  | LO            |
| HI             | Landing Gear Up<br>In-Flight Flight Phase | MID           |
| AUTO           | Rotary Selector determines setting        |               |
| LO             | Always                                    | LO            |

### Engine Control Switch setting AUTO

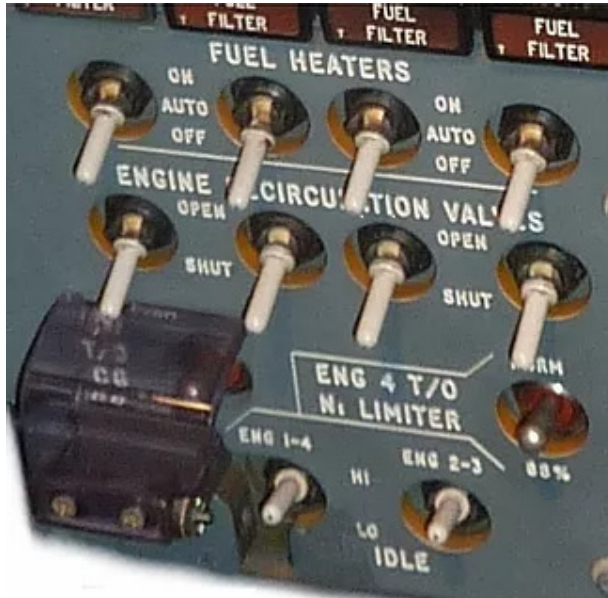
| Rotary Selector Setting | Condition  | Light Setting |
|-------------------------|--|---------------|
| NORMAL                  | Airspeed < 220 knots<br>Take Off Flight Phase                    | LO            |
| NORMAL                  | Airspeed > 220 knots<br>Afterburner Off                          | HI            |
| NORMAL                  | Airspeed > 220 knots<br>In-Flight Flight Phase<br>Afterburner On | MID           |
| FLYOVER                 | Airspeed > 220 knots<br>Mach Speed < 1.0<br>Afterburner Off      | F/O           |
| APPROACH                | Always   | MID           |

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The rotary selector knob is operated with the left and right mouse buttons. The Engine Control Switch is operated with left click for down and right click for up.

## The Fuel Heaters and Engine Circulation Valves



### Fuel Heater Switches

On the real aircraft the Fuel Heater Switches operate as follows:

- ON: Fuel Heaters are on.
- AUTO: Fuel Heaters are on when fuel inlet temperature is less than 5° C
- OFF: Fuel Heaters are off.

In FSX the switches are set using left click for down and right click for up. The settings have no effect on the simulation.

### Engine Circulation Valve Switches

On the real aircraft the Engine Circulation Valves operate as follows:

- OPEN: fuel is recirculated downstream of the engine and CSD oil coolers back to the engine feed tanks to maintain the cooling flow of fuel across the coolers when engine feed flow is reduced by low demand for fuel.
- SHUT: fuel is not recirculated.

In FSX these switches have no effect.

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## **ENG 4 T/O N1 Limiter Switch**

On the real aircraft when the switch is set down to 88%, the N1 for Engine 4 is limited to 88%. This is done when speed is below 60 knots as exceeding N1 of 88% causes airflow distortion at the engine face leading to low pressure compressor blade vibration.

When air temperature is less than -35° C all engines are automatically limited to N1 of 88%.

In FSX this switch has no effect.

## **Idle Switches**

On the real aircraft, LO is normal fuel flow and HI indicates the raised level of fuel flow is no longer used except for cross-bleed starting.

In FSX these switches have no effect.

## **The Secondary Air Doors Panel**



On the real aircraft these switches control the opening of the secondary air doors. When set to AUTO the secondary air doors operate under the control of the ADC. Under ADC these doors open at Mach 0.26 except for Engine 4 where they open at 220 knots. Using these switches the doors can be manually opened or closed at any speed.

In FSX these switches are operated with left click for down and right click for up. They perform no function except to set the shutter above the switch to OPEN or SHUT.

The secondary nozzle gauges are inoperative as FSX does not support variable air intake doors.

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## The Flight Reverser Arm Panel



Pressing the knob on the left arms reversers provided throttle levers are at idle. Reversers are disarmed automatically if throttles are advanced to over 10% of forward thrust.

When reversers are armed the OPEN light illuminates. Reversers can also be armed by centre clicking on the throttle levers.

The NOZZLE light illuminates when the FLYOVER engine schedule is selected when speed is over Mach 1.

The NASU TEST switch tests the Nozzle Angle Scheduling Unit on the real aircraft. In FSX it performs no function.

In FSX the Nozzle Override Switch is inoperative.

## **Panel 4**

### The Machmeter, Altitude & Temperature Indicators



From left to right these gauges display the Mach Speed when greater than Mach 0.25, the Total Air Temperature from -50° C to 220° C, and the Indicated Altitude. The fourth gauge is the cockpit door button which is inoperative in FSX.



# CONCORDE

## The Secondary Engine Instruments

Following are displayed for each of the four engines:



The top needle indicates the Turbine Cooling Air Temperature on the real aircraft. In FSX it shows the Exhaust Gas temperature. The red warning light illuminates when the EGT is greater than 650° C.

The bottom needle shows the Fuel Temperature at the fuel burner manifold on the real aircraft. In FSX it shows a dummy temperature derived from the EGT. The amber light illuminates when the temperature exceeds 250° C.

This instrument displays the Oil Pressure in psi on both the real aircraft and FSX. The red light illuminates when the Oil Pressure is under 15 psi.

The top needle displays the Oil Temperature in both the real aircraft and FSX. The amber light illuminates when the Oil temperature exceeds 180° C

The bottom needle shows the Oil Quantity in US Quarts. For FSX 100% full is equivalent to 14 US Quarts. The yellow light illuminates if the quantity exceeds 14 US quarts.

On the real aircraft this gauge shows the pressure in the jet pipe in psi.

In FSX this gauge displays the Jet Thrust in pounds / 100. The Jet Thrust bug and digital window can be adjusted using left and right mouse clicks on the knob at the bottom right. This has no effect on the simulation.

# CONCORDE

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## The Cockpit Door Control and Fuel Tank Pressure Panel



The Cockpit Door Control panel has a series of lights indicating the status of the doors. This panel is inoperative in FSX.

The Tank Pressure Gauge on the right on the real aircraft shows the difference in pressure between the right hand vent gallery and static pressure. The Tank Pressure Light illuminates when:

- The fuel vent pressure differential is high and rising or
- The fuel vent pressure differential is low and falling or
- The vent gallery absolute pressure is less than 2 psi at altitude

In FSX this gauge measures the pressure differential between the Fuel Pressure and the ambient atmospheric pressure. As on the real aircraft the red needle shows the maximum pressure differential attained during the flight.

## The Oil and Fuel Temperature Warning Test Buttons



Each of these buttons tests a set of lights on the Oil and Fuel gauges above.

- The first button was disconnected on the real aircraft and so does not operate.
- The second button when pressed illuminates the Oil Temperature Warning Lights
- The third button illuminates the Oil Pressure Warning Lights.
- The Fourth button illuminates the Fuel Temperature warning Lights





# CONCORDE

## **Panel 6**

This panel is the lower part only of the Air Bleed Control panel and the Temperature Control Panel. Fortunately these are not functions essential to the simulation.

The upper part of this panel is inoperative in FSX except for the DUCT lights coming on during testing. The only functional panel on Panel 6 is the Equipment Bay Cooling.



## **The Forward Extract Fans**

On the real aircraft three extractor fans extract air from the forward electronics racks, instruments panels, consoles, and the TRU and INS crates. Fan 2 is controlled by the left switch and fans 1 & 3 are controlled by the right switch.

In FSX the switches can be switched down with left click and up with right click. If either switch is off the shutter will display OFF, the FLOW light for the switch will illuminate, and the AIR amber light will illuminate on the Overhead 1 Panel. The switches have no effect on the simulation.

## **The Forward Supply Fans**

On the real aircraft two fans extract air from the cabin and exhaust it into the forward racks.

In FSX the switches can be switched down with left click and up with right click. If switched to LH the right hand fan is switched off and if switched to OFF both fans are switched off. The two shutters will display ON or OFF for each of the two fans. The switches have no effect on the simulation.

## **The Rear Extract Fans**

On the real aircraft two main fans and a standby fan extract air from the rear racks and exhaust underfloor to the aft discharge region. Unlike the forward fans there is no AUTO setting.

In FSX use either mouse button to switch the fans on. The two shutters will display ON or OFF for each of the two fans. If both fans are OFF the FLOW light will illuminate and the AIR amber light will illuminate on the Overhead 1 Panel.

## **The Emergency Relief Switch**

In the real aircraft this switch allows when OPEN for the flow of rack exhaust air to the underfloor area and the rear discharge valves.

In FSX the switch has no effect.

## **The Forward Flow Indicator**

On the real aircraft this gauge displays the mass air flow downstream of the forward extractor fans.

In FSX this gauge shows a pseudo-airflow based on the highest Bleed Air pressure from any of the four engines.

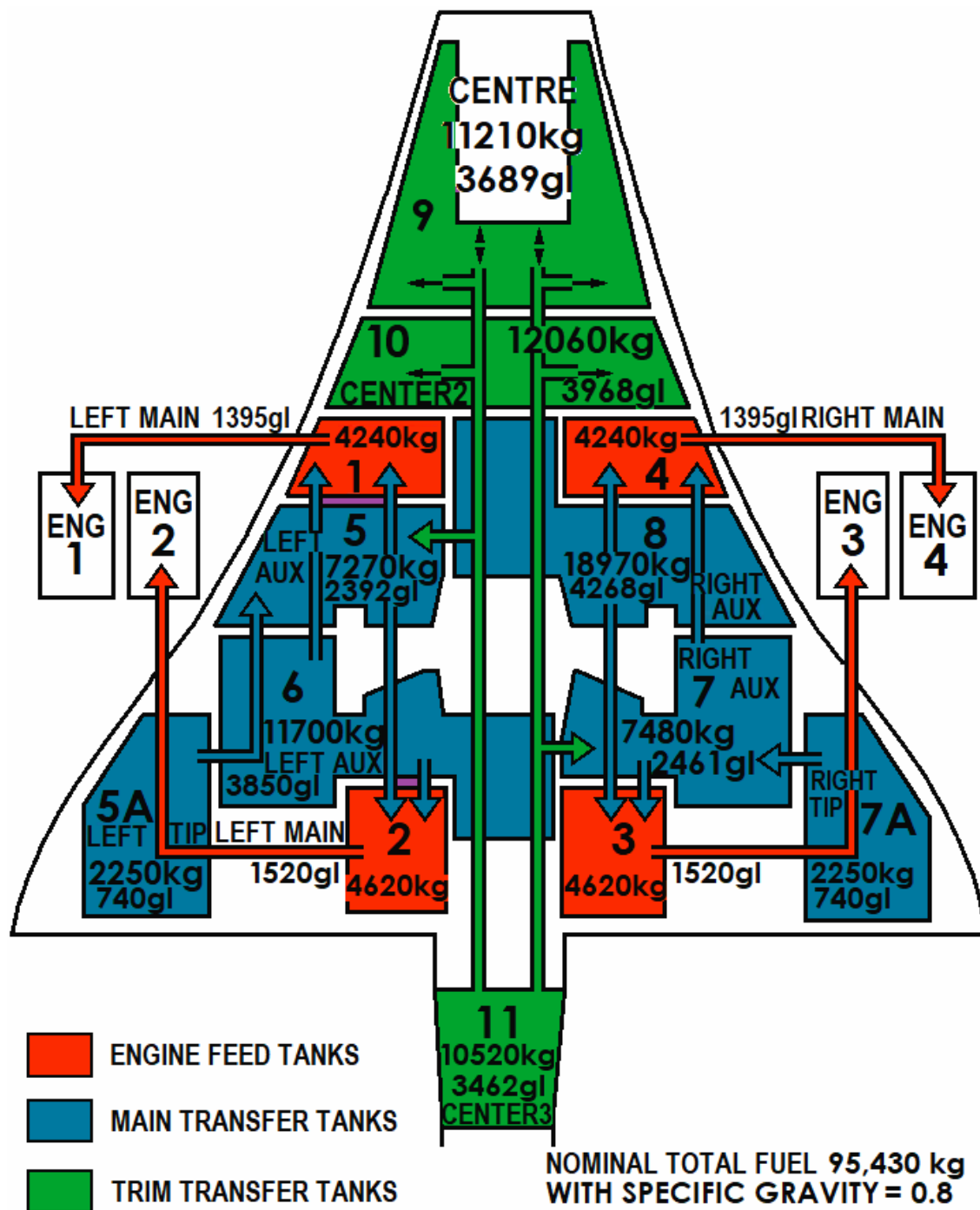
## ***The Fuel Management System***

Panel 7 is the panel which controls the Fuel Management System. Due to the enormous complexity of this system this chapter describes how it works very basically on the real aircraft and how FSX has been designed to simulate this system. It is not necessary to fully understand the system as in FSX it has been automated.

# CONCORDE

## Fuel Management on the real aircraft

Concorde carries 13 fuel tanks numbered from 1 to 11 as shown in the diagram below:



# CONCORDE

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It can be seen from the above diagram that only Tanks 1-4 directly feed the engines with fuel. Fuel is pumped between tanks to eventually pass through tanks 1 to 4 before reaching the engines. The purpose of pumping fuel between tanks is to maintain the balance of the aircraft with the Centre of Gravity in an appropriate position for the phase of the flight. Note that the green tanks are used in particular to pump fuel forward and aft to maintain this balance. For a very detailed look at how the system works and the many technical problems to be overcome please refer to the website <https://www.heritageconcorde.com/fuelgeneral>.

The management of the fuel is largely done manually by the Flight Engineer and a standard sequence is followed:

Tank 5 pumps fuel to Tank 1 via the left hand pump and Tank 2 via the right hand pump  
Tank 7 pumps fuel to Tank 3 via the left hand pump and Tank 4 via the right hand pump

When tanks 5 and 7 are empty the sequence continues with:

Tank 6 pumps fuel to Tank 1 via the left hand pump and to Tank 2 via the right hand pump  
Tank 8 pumps fuel to Tank 3 via the left hand pump and to Tank 4 via the right hand pump

Tanks 5A and 7A are transferred into Tanks 5 and 7 upon reaching Mach 2.

To move the Centre of Gravity to the rear, fuel is pumped from Tanks 9 and 10 into Tanks 11, 5, and 7. To move the Centre of Gravity forward fuel is pumped from Tank 11 into Tanks 9, 5, and 7.

Generally the Centre of Gravity needs to be moved 5 feet aft during transonic acceleration keeping it matched to the Centre of Pressure. Tank 9 contents will initially be pumped to Tank 11 with any surplus going to Tanks 5 and 7 which will have been feeding the engines through tanks 1 to 4. Tank 10 then empties into Tanks 5 and 7 to bring the Centre of Gravity to the correct position for Mach 2.

## **Fuel Management in FSX**

At first sight it seems impossible to replicate such a complex system in FSX since FSX does not have the ability to transfer fuel between tanks. FSX does however have the ability to feed fuel to any engine from any tank and this feature is used to come up with an approximate simulation of fuel management for Concorde.

**Warning:** If you have FSX Flying Tips turned on you will receive spurious messages saying Fuel is critically low in the selected tank. This message is wrong. DO NOT FOLLOW THE INSTRUCTION TO ENTER CTRL X.

Concorde had 13 Fuel tanks but FSX has the ability to handle only a maximum of 11 fuel tanks. For the purposes of the simulation tanks 5 & 6 and tanks 7 & 8 have been joined into one tank. The Concorde Fuel Tanks are mapped to the FSX fuel tanks as follows:

# CONCORDE

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| Concorde   | FSX        |
|------------|------------|
| Tank 1     | Left Aux   |
| Tank 2     | Left Tip   |
| Tank 3     | Right Tip  |
| Tank 4     | Right Aux  |
| Tank 5 + 6 | Left Main  |
| Tank 5A    | External 1 |
| Tank 7 + 8 | Right Main |
| Tank 7A    | External 2 |
| Tank 9     | Center 1   |
| Tank 10    | Center 2   |
| Tank 11    | Center 3   |

The FSX system is based on the premise that Tanks 1 to 4 will always remain full since they are fed continuously from other tanks. In FSX therefore the engines can take fuel directly from the tanks that would be emptied into other tanks on the real aircraft. In FSX the sequence has been set up to be automatic however the sequence can be manually altered by setting of switches on the Flight Engineer's panel. Note however that Tanks 1-4 can not be changed from being the last in the sequence.

The sequence set up in FSX is as follows:

| Engines | Tank    | When                           |
|---------|---------|--------------------------------|
| 1,2,3,4 | 9       | Initial                        |
| 1,2,3,4 | 10      | After Tank 9 is empty          |
| 1,2     | 5A      | After Tank 10 is empty         |
| 3,4     | 7A      | After Tank 10 is empty         |
| 1,2     | 5 and 6 | After Tank 5A is empty         |
| 3,4     | 7 and 8 | After Tank 7A is Empty         |
| 1,2,3,4 | 11      | On descent to move CG forward  |
| 1,2,3,4 | 1,2,3,4 | When all other tanks are empty |

**N.B.** On the real aircraft Tanks 9 and 10 should be empty before reaching Mach 2 due to fuel transfer to tanks 11, 5, and 7. In FSX the rate of burn is more or less sufficient to bring Tank 9 to a low level by the time it reaches Mach 2 and the CG does move in a fairly accurate way.

During descent the real aircraft would pump fuel from Tank 11 to Tank 9 to move the CG forward. This is simulated by burning fuel from Tank 11 and you can see the CG moving forward on the CG Indicator.

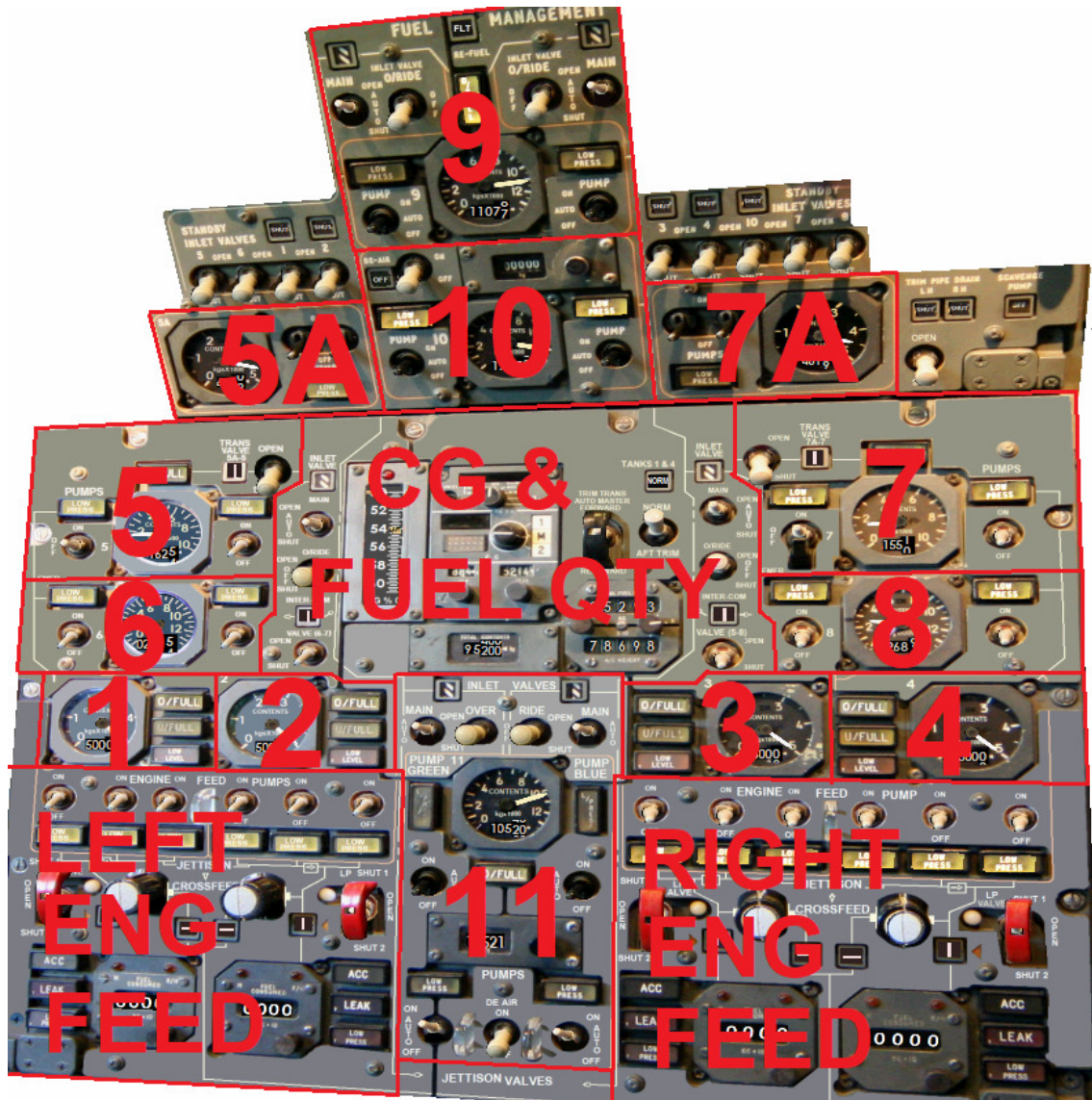
The method of fuel management used in FSX is only an approximation of the real aircraft but during flight you can see the CG Indicator showing the CG moving back early in the flight then moving forward again towards the end of the flight so it does work fairly well.



# CONCORDE

## *Panel 7 Fuel Management*

The majority of gauges on Panel 7 are taken up with Fuel Management as shown in the picture below with the tank numbers indicated in red:



The panels are numbered to show the sections corresponding with the individual fuel tanks. They are laid out on the panel in the approximate relative positions of the fuel tanks in the aircraft.



# CONCORDE

## Fuel Tanks 1 to 4



Fuel Tanks 1 to 4 on the real aircraft are the feed tanks to the engines so they are located directly above the Engine Feed Pumps.

The contents indicator displays the weight of fuel remaining in the tanks in kilograms both digitally and on the dial in 1000s of kilograms. You may notice that when feeding fuel the digital display moves in a jerky fashion. This is because the fuel is fed at such a high rate that FSX can not read the changing volume fast enough to smoothly operate the gauge

The O/FULL light illuminates when the tank is over 97% full.

The U/FULL light illuminates when the tank is less than 80% full.

The LOW LEVEL light illuminates when the tank is less than 10% full.

## Fuel Tank 5



Although internally FSX sees Tanks 5 and 6 as one tank nevertheless Tank 5 can be controlled as if it is a separate tank.

The indicator in the middle shows the fuel remaining in the tank in kilograms with the dial in kilograms / 1000.

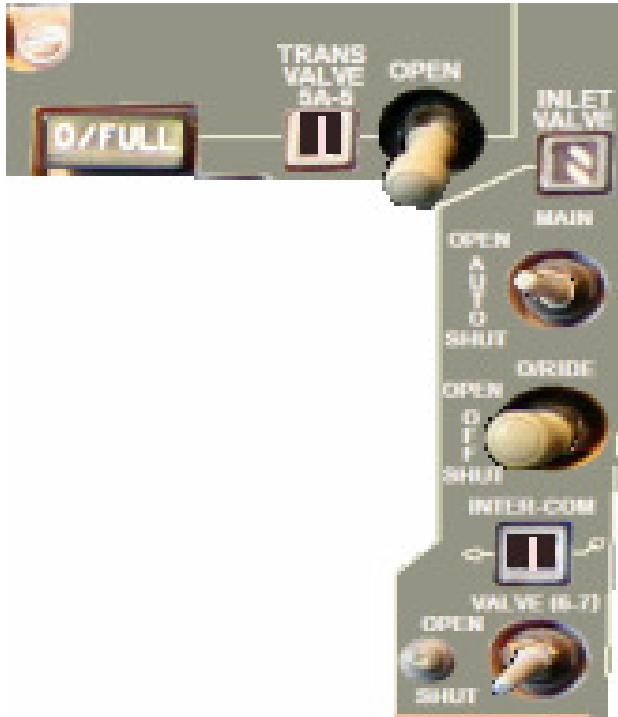
On the real aircraft the EMER setting on the left switch is used to power the pump from an essential busbar. In FSX the EMER position has the same effect as the OFF position. The left switch is a covered switch to prevent accidental setting to EMER on the real aircraft. To operate the covered switch use the right mouse button to open and close the cover and the left mouse button to operate the switch.

# CONCORDE

When either of the two switches is set to the ON position the tank will feed fuel according to the standard sequence. When both switches are set to OFF or EMER the tank will be switched out of the sequence. This should normally never be done but may be done temporarily to balance the aircraft.

The LOW PRESS lights illuminate when fuel is not being fed from this tank.

## The Tank 5 and 6 Inlet Valves



On the real aircraft these switches control the transfer of fuel into Tanks 5 and 6.

In FSX because the tank pumps are ON/OFF with no AUTO function, these switches are used to manually select the tanks to feed the engines.

TRANS VALVE 5A-5 when set to OPEN will feed fuel from Tank 5A to engines 1 and 2

If either the MAIN or ORIDE switches are set to OPEN then fuel will be fed from Tank 5 to engines 1 and 2.

If the VALVE 6-7 Switch is set to OPEN fuel will be fed from Tank 6 to Engines 1 and 2.

**N.B.** The above setting will only override the standard sequence as long as at least one pump from the corresponding tank is ON.

The O/FULL Light will illuminate when Tank 5 is more than 97% full.

# CONCORDE

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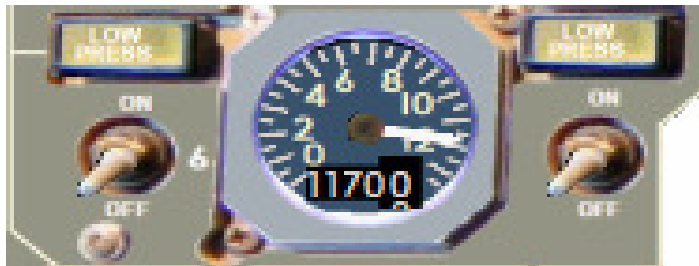
## Fuel Tank 5A



Fuel Tank 5A is one of the first tanks to be emptied in the standard sequence and feeds Engines 1 and 2. The indicator shows the contents of the tank in kilograms. If both of the pumps are set to OFF the tank will be removed from the sequence. If one or both pumps are on the tank will return to the standard sequence.

The LOW PRESS lights illuminate when fuel is not being fed from this tank.

## Fuel Tank 6



This panel is almost identical to Tank 5.

Although internally FSX sees Tanks 5 and 6 as one tank nevertheless Tank 6 can be controlled as if it is a separate tank.

The indicator in the middle shows the fuel remaining in the tank in kilograms with the dial in kilograms / 1000.

When either of the two fuel pump switches is set to the ON position the tank will feed fuel according to the standard sequence. When both switches are set to OFF the tank will be switched out of the sequence. This should normally never be done but may be done temporarily to balance the aircraft.

The LOW PRESS lights illuminate when fuel is not being fed from this tank.

# CONCORDE

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## Fuel Tank 7



Although internally FSX sees Tanks 7 and 8 as one tank nevertheless Tank 7 can be controlled as if it is a separate tank. The panel is the same layout as Tank 5

The indicator in the middle shows the fuel remaining in the tank in kilograms with the dial in kilograms / 1000.

On the real aircraft the EMER setting on the left switch is used to power the pump from an essential busbar. In FSX the EMER position has the same effect as the OFF position. The left switch is a covered switch to prevent accidental setting to EMER on the real aircraft. To operate the covered switch use the right mouse button to open and close the cover and the left mouse button to operate the switch.

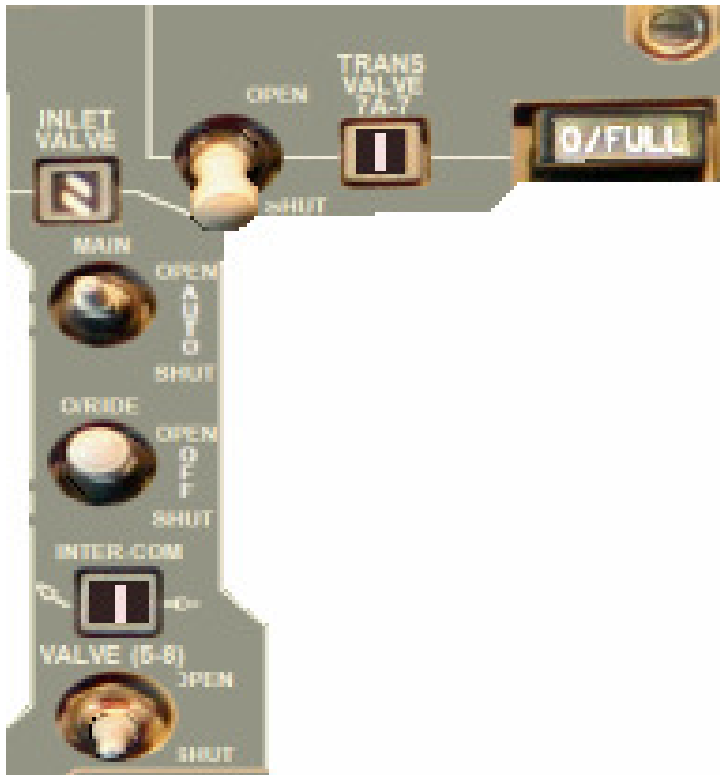
When either of the two switches is set to the ON position the tank will feed fuel according to the standard sequence. When both switches are set to OFF or EMER the tank will be switched out of the sequence. This should normally never be done but may be done temporarily to balance the aircraft.

The LOW PRESS lights illuminate when fuel is not being fed from this tank.

# CONCORDE

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## The Tank 7 and 8 Inlet Valves



This small panel has the same functions as that for Tanks 5 and 6 but for Tanks 7 and 8.

On the real aircraft these switches control the transfer of fuel into Tanks 7 and 8.

In FSX because the tank pumps are ON/OFF with no AUTO function, these switches are used to manually select the tanks to feed the engines.

TRANS VALVE 7A-7 when set to OPEN will feed fuel from Tank 7A to engines 3 and 4  
If either the MAIN or ORIDE switches are set to OPEN then fuel will be fed from Tank 7 to engines 3 and 4.

If the VALVE 5-8 Switch is set to OPEN fuel will be fed from Tank 8 to Engines 3 and 4.

**N.B.** The above setting will only override the standard sequence as long as at least one pump from the corresponding tank is ON.

The O/FULL Light will illuminate when Tank 7 is more than 97% full.

# CONCORDE

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## Fuel Tank 7A



Similar to Fuel Tank 5A, Tank 7A is the one of the first tanks to be emptied in the standard sequence and feeds Engines 3 and 4. The indicator shows the contents of the tank in kilograms. If both of the pumps are set to OFF the tank will be removed from the sequence. If one or both pumps are on the tank will return to the standard sequence.

The LOW PRESS lights illuminate when fuel is not being fed from this tank.

## Fuel Tank 8



This panel is almost identical to Tank 6.

Although internally FSX sees Tanks 7 and 8 as one tank nevertheless Tank 8 can be controlled as if it is a separate tank.

The indicator in the middle shows the fuel remaining in the tank in kilograms with the dial in kilograms / 1000.

When either of the two fuel pump switches is set to the ON position the tank will feed fuel according to the standard sequence. When both switches are set to OFF the tank will be switched out of the sequence. This should normally never be done but may be done temporarily to balance the aircraft.

The LOW PRESS lights illuminate when fuel is not being fed from this tank.

# CONCORDE

## Fuel Tank 9



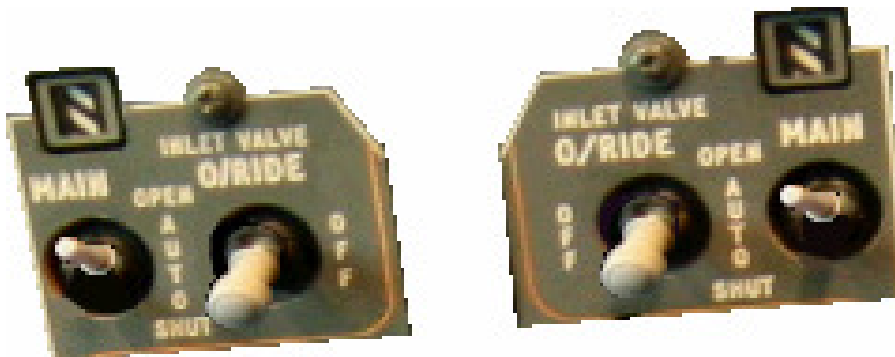
Each of the pumps for this tank is set to AUTO by default. When set to AUTO the tank will feed the engines according to the standard sequence. When set to OFF the tank will be removed from the standard sequence and when set to ON the tank will override the standard sequence and feed directly to the engines. The left switch feeds Engines 1 and 2 while the right switch feeds Engines 3 and 4.

The centre indicator indicates the current contents of the tank in kilograms.

The O/FULL light illuminates when the contents of Tanks 9 and 10 exceed 97% of their capacity.

The LOW PRESS lights illuminate when fuel is not being fed from this tank.

## The Tank 9 Inlet Valves



On the real aircraft these switches control the transfer of fuel into Tank 9.

In FSX as transfer of fuel is not done these switches are dummy witches.



# CONCORDE

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## Fuel Tank 10



Tank 10 is similar to Tank 9 but includes a DE-AIR switch and Load Limit Rotary Selector. The De-Aeration in Tank 10 is operated with a special pump but de-aeration in other tanks (6, 8, 5A, and 7A) by the normal pumps. On the real aircraft de-aeration is required in tanks where the fuel remains static for long periods during the climb. This is because as the air pressure in the tank decreases air in solution will expand causing fuel pump air pockets and irregular fuel pump pressure.

In FSX the De-aeration switch is a dummy switch.

On the real aircraft the Load Limit Rotary selector is used to limit the quantity of total fuel transfer into tanks 9 and 10. As fuel transfer does not take place in FSX this instrument simply repeats the tank fuel contents in kilograms.

Each of the pumps for this tank is set to AUTO by default. When set to AUTO the tank will feed the engines according to the standard sequence. When set to OFF the tank will be removed from the standard sequence and when set to ON the tank will override the standard sequence and feed directly to the engines. The left switch feeds Engines 1 and 2 while the right switch feeds Engines 3 and 4.

The centre indicator indicates the current contents of the tank in kilograms.

The LOW PRESS lights illuminate when fuel is not being fed from this tank.

# CONCORDE

## Fuel Tank 11



Tank 11 is the balance tank at the rear of the aircraft. It differs from other tanks in that there are four fuel pumps instead of two. Two of these pumps are driven by the hydraulic system whilst the other two are driven by the normal electric system.

Tank 11 is similar to Tank 10. The De-Aeration in Tank 11 is operated with a special pump but de-aeration in other tanks (6, 8, 5A, and 7A) by the normal pumps. On the real aircraft de-aeration is required in tanks where the fuel remains static for long periods during the climb. This is because as the air pressure in the tank decreases air in solution will expand causing fuel pump air pockets and irregular fuel pump pressure.

In FSX the De-aeration switch is a dummy switch.

Each of the pumps for this tank is set to AUTO by default. When set to AUTO the tank will feed the engines according to the standard sequence. When two switches on the same side are set to OFF the tank will be removed from the standard sequence and when either of the two switches is set to ON the tank will override the standard sequence and feed directly to the engines. The left two pumps feed Engines 1 and 2 while the right two pumps feed Engines 3 and 4.

The LOW PRESS lights illuminate when fuel is not being fed from this tank.

# CONCORDE

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## Fuel Tank 11 Inlet Valves



On the real aircraft these switches control the transfer of fuel into Tank 11.

In FSX these switches allow the manual feeding of fuel from Tank 11 to the Engines.

Switching either one of the left side MAIN or OVERRIDE to OPEN will feed fuel from Tank 11 to Engines 1 and 2. Switching both switches to SHUT will remove Tank 11 from the sequence of feeding Engines 1 and 2.

The two switches on the right side perform the same functions for Engines 3 and 4.

## Fuel Management Summary

The Fuel Management System is complex however if all of the Fuel Pumps are left at AUTO or at ON in some tanks that do not have an AUTO position then the fuel system will work fine.

If Fuel Pumps on multiple tanks are set to ON rather than AUTO then there will be conflict and the fuel system will feed from the last tank in numerical sequence that is set ON.

The LOW PRESSURE lights will illuminate on all tanks that are not feeding the engines so the tank where the LOW PRESSURE light is off will be the tank feeding the engines.

# CONCORDE

## **Panel 7**

This chapter deals with the remaining gauges on Panel 7. Some are related to Fuel Management and feed into the fuel management system. The sequence starts at the top and goes then left to right.

### **The Standby Inlet Valves**



The Standby Inlet Valves appear on both the left and right hand sides of Panel 7 as depicted above.

On the real aircraft these switches allow fuel from the main trim transfer pipe to enter directly into the appropriate tank. Shutters are provided only for Tanks 1, 2, 3, 4, and 10 to show the status of the valves.

In FSX these are all dummy switches and perform no function although the shutters do operate.

### **The Fuel Low Pressure Protection Panel**



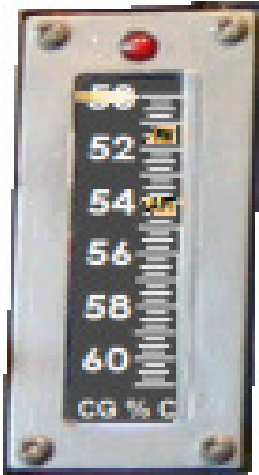
On the real aircraft when there is low fuel pressure in the engine feed supply, this switch will open by-pass valves causing the fuel supply to by-pass the air conditioning and the hydraulic heat exchangers.

In FSX this is a dummy switch which operates the shutters but has no other effect.

# CONCORDE

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## The Centre of Gravity Indicator



This indicator is a repeat of an indicator on the Captain's Panel.

The white marker on the left shows the current Centre of Gravity (CG) position.

The yellow markers on the right show the maximum and minimum permitted position for the CG.

## The Centre of Gravity Test Panel



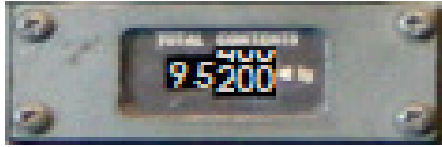
On the real aircraft this panel provides facilities to do various tests of sensors and channels.

In FSX apart from displaying the Centre of Gravity percentage this panel is inoperative.

# CONCORDE

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## The Total Fuel Display Indicator



The Total Fuel Display Indicator displays the total fuel on board in kilograms. This instrument repeats on the pilot's centre instrument panel.

## The Trim Transfer Panel



On the real aircraft the covered switch initiates a fuel transfer forward or aft. The switch on the left moves the trim for tanks 1 and 4 aft.

In FSX these two switches are dummy switches.

The indicator at the bottom displays the Total Fuel remaining in the top window and the Total Aircraft Weight in the lower window. Both numbers are in kilograms.

On the real aircraft these dials are set manually and have only five digits for the aircraft weight despite this number being over 100,000 kilograms.

# CONCORDE

## The Engine Feed Pumps Panel



There are three Engine Feed Pumps for each of the four engines. The illustration above shows the panel for Engine 1 and 2. Engines 3 and 4 have a similar panel on the right of Panel 7.

On the real aircraft the Engine Feed Pump switches feed fuel from Tanks 1 to 4 to the corresponding engine. In addition cross feed valves are provided to allow any set of pumps to send fuel to any of the engines. Given the high degree of redundancy with three pumps per engine, it is hard to see any circumstance when this would be needed unless all three pumps on one engine failed.

- The LP Valve Selector covered switches (left and right) are always open except when the engine shutdown handle is pulled.
- The ACC Light illuminates when there is a low level fuel pressure downstream of the collector tank pumps or low air pressure in the accumulator.
- The purpose of the LEAK light is unclear.
- The LOW PRESS Light illuminates when a low pressure condition exists upstream of the engine pump.
- The Cross Feed Rotary Selector allows cross-feeding from one set of pumps to other engines.
- The Fuel Consumed Indicator displays the amount of fuel consumed by the individual engine since the start of the flight.



# CONCORDE

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In FSX, unlike the real aircraft, the Engine Feed Pumps feed fuel from whatever tank is selected. On start up all of the switches are set ON. Note that if all three switches for one engine are switched OFF the engine will shut down unless cross-feed has been selected.

The LP Valve Selector covered switch will cut fuel to the corresponding engine if set to SHUT 1 or SHUT 2 and the engine will shut down.

The ACC and LEAK Lights do not function.

The LOW PRESS Light illuminates when the fuel pressure for the corresponding engine falls below -0.5 psi less than the ambient air pressure.

The cross feed valves allow the cross feeding of fuel in a similar way to the real aircraft. It operates when all fuel pumps for a particular engine have been switched off. The cross feed valve for that engine should then be rotated and the cross feed valve for the engine where the fuel is coming from also needs to be rotated. The first engine will then get its fuel from the same source as the second engine. For example:

- Engine 1 pumps are to be shut off. Engine 3 is sourcing its fuel from Tank 7. If the cross feed valves for both Engine 1 and Engine 3 are set ON then Engine 1 will receive its fuel from Tank 7.

**N.B.** Ensure that the cross feed valves are selected FIRST before shutting off the engine pumps.

FSX does not calculate the amount of fuel used per engine so the Fuel Consumed Indicator displays the total fuel used divided by 4.

# CONCORDE

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## The Fuel Temperature Indicator



On the real aircraft this indicator displays the Fuel Temperatures in the engine feed system for the engine selected by the Fuel Temperature Rotary Selector below the indicator. The TANK temperature displays the temperature upstream from the air conditioning and hydraulic heat exchangers. The ENG temperature displays the temperature downstream of the air conditioning and hydraulic heat exchangers.

FSX does not have the facility to measure fuel temperature so this gauge displays the ambient air temperature plus 10° C for TANK and the ambient air temperature plus 5° C for ENG. The rotary selector works but performs no function.

# CONCORDE

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## The Fuel Jettison Panel



The Fuel Jettison Panel controls the Fuel Jettison function both on the real aircraft and in FSX.

The panel is covered with a semi-transparent plastic cover which can be opened manually. In FSX it was not possible to reproduce this realistically so the cover remains closed.

In order to jettison from the left side switches 1 and 2 must be set to OPEN as well as the left Master Valve switch. Similarly right side switches 3 and 4 must be set to OPEN plus the right Master Valve switch.

FSX is restricted to jettisoning fuel from all tanks simultaneously and with only one jettison port. Either switches 1, 2 and left master or alternatively 3, 4 and right master or both must be set to OPEN. In any case the rate of fuel jettison will be the same.

# CONCORDE

## The Scavenge Pump Panel

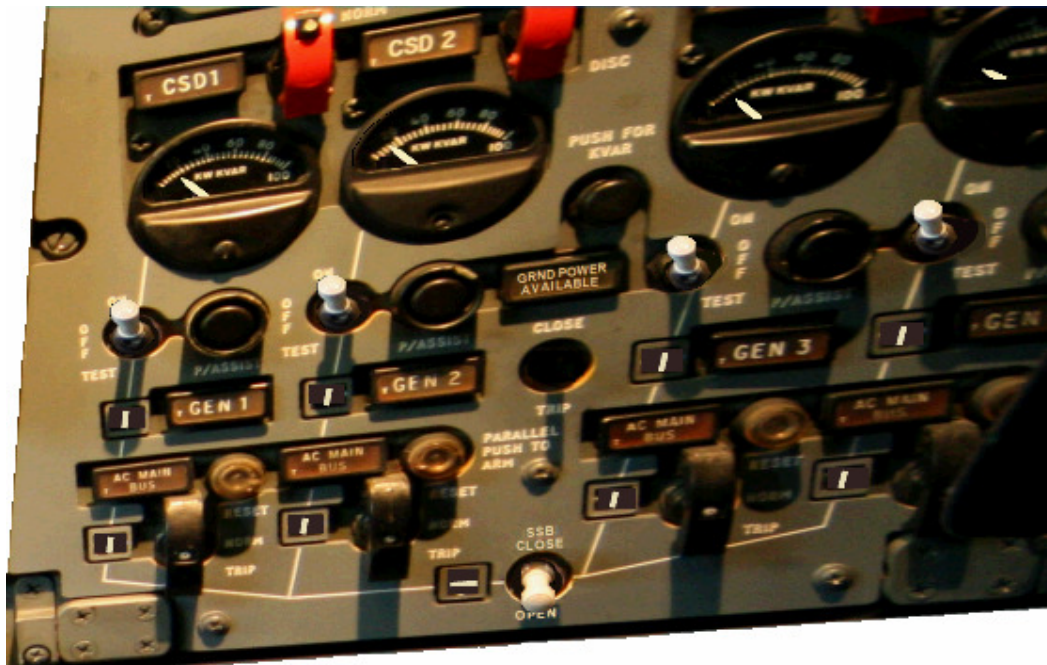


On the real aircraft setting the switch to OPEN connects the main trim transfer pipes to the vent scavenger tank.

FSX does not support the scavenger tank so the switch performs no function other than setting the Trim Pipe Drain Valve shutters to OPEN.

## **Panel 8**

Panel 8 is the Electrical Panel and is only partially visible in FSX.



# CONCORDE

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## The Constant Speed Drive (CSD) Control Panels



On the real aircraft there is one of these panels for each CSD on each engine. The indicator shows the generator load in kilowatts. The red covered switch disconnects the CSD from the engine and automatically disconnects the generator from the AC main busbar. The CSD warning light illuminates when there is low oil pressure in the CSD.

In FSX unfortunately only two out of four of these panels are visible so the switches disconnecting the CSD are inoperative. All four indicators however do work and display the generator load in kilowatts as on the real aircraft.

## The Generator Control Panels



There are four Generator Control panels for each of the four generators attached to each engine.

# CONCORDE

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On the real aircraft switching the white generator selector to OFF disconnects the generator from the AC main busbar. The black pushbutton to the right of the selector is pressed to increase the generator frequency by 3Hz in order to speed up the self-paralleling of the generator to the busbar when the frequency difference is greater than 4Hz or when the phase angles are different.

- The GEN x light illuminates when the GCB fails to connect the generator to the associated AC main busbar.
- The AC MAIN BUS light illuminates when there is no electrical supply to the AC main busbar.
- The BTB Selector next to the AC MAIN BUS light when set to TRIP opens the BTB and disconnects the associated AC main busbar from the others.
- In between Engines 2 and 3 panel is the GRND POWER AVAILABLE light which illuminates when ground power is available.
- Below this is the SSB Switch which, when OPEN, isolates the AC main busbars 1 and 2 from the AC main busbars 3 and 4.

In FSX much of this panel works in the same way as the real aircraft.

The white generator selector switches off the corresponding generator when set to OFF thus setting both shutters to closed and illuminating the GEN x and the AC MAIN BUS lights.

The black pushbutton is inoperative as is the BTB selector switch.

The GRND POWER AVAILABLE light will illuminate when:

- The aircraft is on the ground
- All four engines are shut down
- Ground speed is zero

The SSB switch works but has no effect.



# CONCORDE

## **Panel 9**

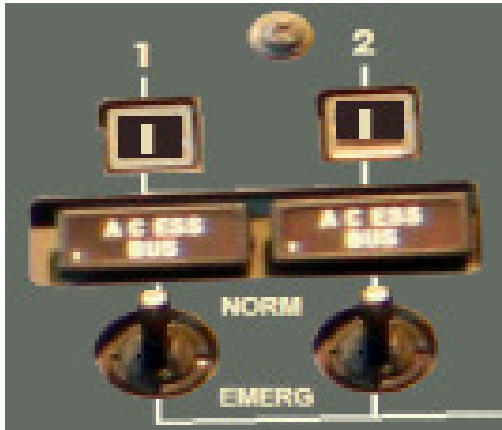
Panel 9 is a continuation of the Electrical Panel with AC Essential Bus controls and the DC Power supply controls..





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## The AC Essential Power Switches



On the real aircraft these switches switch on the Emergency Generator and disconnect the AC Essential busbar from the AC main busbar then connects it to the emergency generator output busbars.

In FSX, as there is no emergency generator, these switches perform no function.

## The Emergency Generator Panel



On the real aircraft this panel controls the Emergency Generator. The covered switch on the left arms the Emergency Generator for operation when set to NORM and switches off the emergency generator hydraulic supply and the O/HEAT light supply when set to ISOL.

The indicator in the middle shows the output of the emergency generator in kilowatts.

The switch on the right starts the emergency generator when set to MANUAL. When set to AUTO the emergency generator will operate when any AC main busbar loses its supply or when engines 1 and 2 fail in-flight. When set to GRD BY-PASS the weight switch inhibit circuit of the emergency generator is bypassed.

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- The O/HEAT light illuminates when an emergency generator bearing is at a high temperature.
- The SELECTED light illuminates when hydraulic power has been selected to drive the generator.
- The FAIL light illuminates when the emergency generator has been selected but is outside its operating limits.

In FSX since there is no emergency generator this panel is inoperative.

## The DC Power Panel



This panel controls the DC buses and the batteries. On the real aircraft there are two batteries – Battery A and Battery B with two identical panels to control each.

- The white switch in the middle switches the corresponding battery ON or OFF. Setting it to the SPLIT position separates the two batteries to only power their own buses.
- The indicator in the middle shows the battery load in amperes.
- The DC ESS BUS light illuminates when the corresponding DC busbar is unpowered.
- The BATT ISOLATE light illuminates when the battery is disconnected from its busbar.
- The DC MAIN BUS light illuminates when one or both parts of the busbar are at less than 25 volts

In FSX the switch works in much the same way however in FSX there is only one battery. Two batteries are simulated though the switches. When both switches are set to OFF the battery is switched off. Switching the switches to SPLIT has the same effect as the battery being ON.

All three of the lights illuminate under the same conditions as the real aircraft.

The indicator for both Battery A and B show the same load in amperes since there is really only one battery.

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## The Voltmeters Panel



The Voltmeters on this panel display the voltages selected on the Voltage selector with DC volts displayed on the left meter and AC volts displayed on the right meter.

The central meter displays the voltage frequency.

In FSX the central meter always displays 400.

The DC Volts meter displays the voltage according to the selector as follows:

|         |                      |
|---------|----------------------|
| BATT A: | Battery Voltage      |
| ESS A:  | Avionics Bus Voltage |
| MAIN A: | Battery Bus Voltage  |
| MAIN B: | Battery Bus Voltage  |
| ESS B:  | Avionics Bus Voltage |
| BATT B: | Battery Voltage      |

The AC Volts meter displays the voltage according to the selector as follows:

|            |   |
|------------|---|
| GRD PWR:   | If Ground Power available displays 150 volts. |
| EMERG PWR: | Battery Voltage                               |
| GEN 1:     | Engine 1 Generator Bus Voltage                |
| GEN 2:     | Engine 2 Generator Bus Voltage                |
| GEN 3:     | Engine 3 Generator Bus Voltage                |
| GEN 4:     | Engine 4 Generator Bus Voltage                |

## The Galley Controls Panel



This panel controls the electricity supply to the galleys. On the real aircraft the water heaters and the overall supply of electricity to each galley can be controlled. The function of the MWS push button is unknown.

In FSX the TEST LIGHTS CTR switch tests all of the lights in the centre Flight Engineer's Panel. The TEST LIGHTS AFT switch tests all the lights on the aft Flight Engineer's Panel. The other three switches have no effect.

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## The Temperature and Nozzle Override Panel



The temperature gauge on this panel is a repeat of the temperature gauge found on the pedestal in the VC cockpit. It displays from top to bottom the Total Air Temperature, the Static Air Temperature, and a dummy temperature contrived from the altitude.

The Nozzle Override Panel on the real aircraft is used to do tests on the Position Indicator Drive Unit (PIDU) and the Nozzle Thrust Reverse Controller (NTRC). In FSX this panel is inoperative.

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## *The Engine Start Panel*

Clicking on the  Icon displays the Engine Start pop-up panel. Clicking again on the same icon cancels the Engine Start Panel display.



The Engine Starting Panel is located next to the Flight Engineer's left knee and only partially appears on the main Flight Engineer's Panel. Because this is a needed panel it has been created as a pop-up panel which can appear either on the main panel or on the Flight Engineer's panel.

On the real aircraft the RELIGHT/START switches when set to START are used to open an air valve to turn the engine with an air starter. It also energises the start fuel pump and allows selective ignition through the ignition rotary starter. When set to RELIGHT, provided the throttle lever is at idle the start electrical fuel pump will run and both engine igniters will be energised.

The Engine Debow Switches are normally set to NORMAL however when set to DEBOW the HP spool (N2) rpm is kept below normal idle until the HP spool shaft temperature is constant to ensure the shaft rotates true.

The Ignition Rotary Selector can be set to OFF, LH, BOTH, or RH to select the igniters to be used when starting the engine. The corresponding green Igniter Lights will illuminate when selected.

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The EMERG RELIGHT BUSBAR knob selects the busbars to be powered by the Emergency Generator. It is normally set to OFF.

In FSX the RELIGHT/START Switches have only two positions. When switched to START the corresponding engine will start provided the Ignition Rotary Selector is not set to OFF. When the selector is OFF the START switch will rotate the engine but it will not ignite.

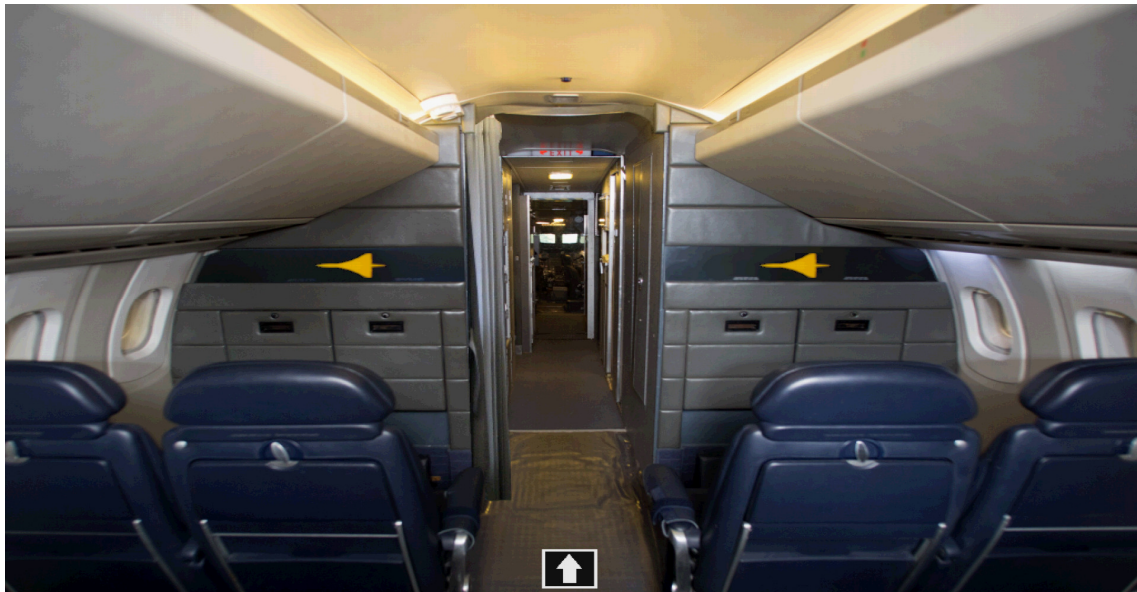
The DEBOW switches in FSX are dummy switches.

The Ignition Rotary Selector can select LH, NOTH, or RH as on the real aircraft with the corresponding lights illuminating however in FSX it makes no difference which setting is chosen.

The EMERG RELIGHT BUSBAR has no effect on the simulation.

## ***The Cabin Panel***

Clicking on the  Icon will display the passenger cabin as below:






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When airspeed is above 100 knots the Mach speed (Mach No.), Indicated Altitude (feet), outside temperature (°C), and Ground speed (miles per hour) display in the panels at the front of the cabin as below:



Interestingly on the real aircraft the Captain manually types in these figures on a console next to him on the Pedestal He can therefore type in information that differs from the instruments if he chooses. In FSX these figures come directly from the instruments.

Clicking on the  Icon returns to the main panel.



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## *The Ground Handling Panel*



This is a small heads-up display that appears only when all 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.

On the Concorde model there are only two animated exits however provision is made to open two other exits which are not animated:

- **M**: Opens the left forward Passenger main exit (EXIT 1)
- **A**: Opens all six remaining exits on both left and right sides (EXIT 2)
- **H**: Opens the miscellaneous hatches (not animated – EXIT 3)
- **C**: Opens the lower Cargo door (not animated – EXIT 4)

The panel will disappear when FSX is paused as the simulator becomes confused about which doors are open. Due to the method used by FSX to operate doors they can be quite temperamental and the buttons need to be pressed with a pause between each one.

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 all 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 any engine is started which normally happens after pushback.

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