SkyDecks Panel Design

Boeing 737-NG Panel v3.15

For Microsoft Flight Simulator 2004

Installation and User Guide

This project is dedicated to my wife.
Thank you for all of your patience and support, and most especially for your talented voice acting as our flight attendant!

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Thank you!

On behalf of the SkyDecks family, **w**e thank you for your patronage in purchasing your SkyDecks Panel Design product, and welcome you aboard as a valued customer. We have very much enjoyed the creation of what we hope you will find to be, one of the finest panel renditions of the Boeing 737 Next Generation available for the Microsoft Flight Simulator enthusiast. Much time and thought has gone into the design and application of this panel for the virtual pilot. Our goal to create quality product that will fill the need of many within the flight simulation community, is brought about in part from comments we receive. Your opinions are valued and very much necessary in helping us to continue in providing you with the quality that is expected from a SkyDecks product. All of us hope you will enjoy our rendition of the *Boeing 737 Next Generation Panel* as much as we enjoyed developing it. Thank you!

Sincerely,

Kevin Sparkuhl
Developer and Founder

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Acknowledgements

I would like to give a special thank you to Kim Halat, President of Avsoft Systems, Inc. His permission in allowing us the usage of several Avsoft images throughout this manual is greatly appreciated. The use of their overhead and system schematic images will allow the end user to better understand these respective systems throughout the SkyDecks project. Thank you Kim for your help with this!

Avsoft produces a complete line of pilot training materials, instructional graphics, Smart Graphics, interactive systems, color cockpit posters, computer based training, cockpit mockup trainers, color Quick Study Guides, large scale graphics, Flight Management (FMC) CBT, testing and review software for many commercial aircraft.

The Avsoft Quick *Study Guide for the Boeing 737 NG*, was used as reference in the building of this panel product. If you would like to purchase your own copy of this manual, or any of the products available from Avsoft, please visit their website.

Avsoft can be found on the web at http://www.avsoft.net

I would also like to thank Doug Dawson for the creation of the sound gauge. His file, "SkyDecks_Sound.gau", adds a wonderful element to our projects. Thank you very much Doug for providing us with this gauge and also for your time and patience!

I would like to also thank the contributions of many who have helped to make this project possible, many of whom are well known in the FS community. Firstly I wish to thank the many contributors within the AVSIM panel design forum: Tom Aguilo, Jan Van Harten, Bill Leaming, Eugen, Roman, Mathias Lieberecht, Arne Bartles, Rob Barendregt, Paul Scarratt, Nick Pike, and many others whom I may have forgotten at this time. Thank you all for your help in the forums and in the contributions you make to the FS world!

The Boeing 737 Next Generation

The Boeing 737 is the world's most popular short to medium-range, narrow body commercial passenger jet airliner. The 737 Next Generation, which is based on a key Boeing philosophy of delivering added value to airlines with reliability, simplicity and reduced operating and maintenance costs, is the most ordered and produced commercial passenger jet airplane of all time. It has been continuously manufactured by Boeing Commercial Airplanes since 1967 and has won orders for more than 6,000 airplanes, which are more airplanes than The Boeing Company's biggest competitor has won for its entire product line since it began business. This airliner is now so widely used that at any time there are over 1250 of these aircraft in the air worldwide.

The 737-600, -700, -800, and -900 models continue the 737's pre-eminence as the worlds most popular and reliable commercial jet transport. These newest members of the Boeing 737 family, the Next Generation, are an entirely new aircraft which share very little with previous 737s other than fuselage and airframe, and includes a complete redesign of the 30-year old airliner. New wings, new avionics and revised engines were the biggest engineering changes. The 737 was given a glass cockpit with CRT screens (except the -900, which had newer and higher tech LCD screens) and digital systems inspired by the ones that were used on the 777. A new interior was designed for the Next Generation 737, again borrowing heavily from the 777. The parts count is down by about 33%, reducing weight and simplifying maintenance. Additional changes since its introduction include a new interior and performance enhancing winglets which reduce fuel consumption and improve take-off and climb performance.

The 737 was stretched one more time in 2001 to create the 737-900, which is in fact longer and carries more passengers than the Boeing 707, and steps into the capacity of the Boeing 757-200. As a result of a weakened demand for the 757 and accompanied with the efficiency and greater passenger capacity of the 737 Next Generation, Boeing cancelled the 757 line in 2004. In 2005, the 737 lost its distinctive "eyebrow" windows in the cockpit which were once a requirement in the 1960s due to FAA certification requirements. These windows helped to offer a minimum windscreen area and increased visibility in banking maneuvers which are all but now deemed unnecessary. A retrofit kit will be offered to remove these windows on existing aircraft.

On February 13, 2006, Boeing reached a production milestone by delivering the company's 5,000th 737 to Southwest Airlines. The 737-700 was the 447th 737 to join the immensely successful carrier's fleet of all Boeing 737 jets.

SkyDecks 737-NG Panel Features

You are about to begin flying one of the most popular and technologically advanced airliners of our time, the Boeing 737-Next Generation! This SkyDecks Panel Design product is developed for use with Microsoft Flight Simulator 2004, and incorporates custom designed 3D bitmaps and gauges, to recreate how it might feel to take the controls of this magnificent airliner.

A list of features included for version 3.15 of this panel build:

- 2 Display Unit styles, both Full and Compact are available at startup. Select the one you want to match the specifications of the virtual airline you fly for.
- In Full mode, the Display Unit control moves selected display unit to other positions.
- Selectable speed reference bugs within the Primary Flight Display unit, with audible callouts for V-1, Rotate, V-Ref, and Delta-Ref, as well as gear retraction callouts.
- Full GPWS system and altitude descent callouts to aid in precision landings.
- Simulated N1 speed control is now available with setting visible within the EIS.
- 15 Position Dimmable panel LED Display Units, Autopilot and Radio Stack Windows to reduce eye strain in long, night-time flying conditions.
- Adjustable panel lighting Rheostats to control both panel and flood lighting brightness, to customize your lighting environments.
- Fully functional overhead panel, with APU, Pneumatic, Hydraulic and Electrical systems.
- Simulated Fuel panel. Select any or all tanks, and a working fuel cross-feed switch.
- Simulated Pneumatics panel. Bleed air simulation for air-conditioning, engine starts and anti ice valves. Startup procedures are realistic.
- Simulated Electrical System with transfer buses 1or 2 selectable, ground power function, APU power, Master Battery and Auxiliary Power available.
- New Autopilot MCP logic with correct IAS/Mach and Vertical Speed readings. Readings for IAS-Mach change over at M.60 or FL-260. V/S window is blanked out at level flight.
- Auto-Landing feature. Will guide your aircraft to a smooth landing. ILS/DME required.
- New Pilot and Flight Attendant recordings to help you feel more at home in the cockpit.
- Working windshield wipers and controls help to make flying in the rain more realistic.
- New design of flight yoke that works in unison to the flight control stick or Autopilot.
- Pilot “reflections” within the display units may be toggled on or off.
- Each display unit may be undocked and maximized by clicking the unit’s lower-left button.

Some additional features are:

- Carefully detailed 3-D bitmaps and positioning of pop-up windows.
- Fuel weight gauges that also display visual levels as well as numerical levels.
- HUD integrated into the main panel view, patterned after the real thing.
- All gauges carefully illuminated with "back-lit" text for easier night-time viewing.
- Six interior cockpit directional views, with six alternate passenger wing views.

...and much more!

Section 1: Installation

Before You Proceed

COMMENTS AND SUPPORT

*****PLEASE DO NOT contact Flight1 Software with any support or purchase issues.***

All inquiries should be directed to the following email addresses:
Flight1 Software Key File support: **keyfiles@sky-decks.com**
For other support inquiries: **support@sky-decks.com**
For general customer service: **ksparkuhl@sky-decks.com**

Any and all comments are welcome!

Please visit our website at **http://www.sky-decks.com** for updates and FAQ support. You may also leave questions and comments at **our support forum by visiting the link here**.

***** If you are a previous customer and are updating your product, please note that the previous panel configuration path has changed from version 2. You will need to update the panel.cfg files in the aircraft folders you are currently using the 737 panel with. The new panel.cfg path is listed below. Please update your panel.cfg's to the new location.**

******* It is not recommended to install the panel to the default Microsoft Boeing 737. Please choose a third party add-on aircraft to use with your new panel. For your convenience, an aircraft package has already been assembled and configured for use. It is available on either the AVSIM or FlightSim.com libraries as "**SD737NG.zip**".

******* Due to the large number of image files within this panel product (there are 1049 .bmp image files!), there will be a slight delay at start-up while the panel files load and when you originally call-up the overhead panel. This is normal for a panel of this file size. It is recommended that you have at least a half gig of system memory or more, and that you also have a good video card installed as well. Once loaded, the panel is very smooth.

Installation:

SkyDecks Panel Design is one of the first flight simulation software companies to offer stand alone panel products for enthusiasts to install into the aircraft of their choice. Because of this unique marketing method, one can choose which third party add-on aircraft to use when enjoying their SkyDecks panel. Perhaps you already have an aircraft file in mind that you'd like to use your new panel with, or maybe you're new to the hobby and would like to know how this process is done. In either case the installation is just as simple as one for the other.

The SkyDecks Boeing 737-NG Panel comes with an auto-installation executable program. This first step of installation, when executed, will install all the basic panel files required for the panel to be run within Microsoft Flight Simulator. After you've run the .exe file you then have two options for completing the installation to an aircraft folder:

1 – Install a panel configuration file to the desired aircraft folder of your choice, or

2 – Download and install our freeware aircraft package that's already configured for the panel.

With the first option, this requires the user to simply place a panel configuration file within an aircraft folder in Microsoft Flight Simulator's root folders. You will also have to make some minor adjustments to the aircraft configuration file as well. More on this later in the "Configuration File Adjustment" section. If you do not feel comfortable with performing the editing of these files and folders, you may choose option

two. Option 2 is the freeware aircraft package mentioned above. It also utilizes an auto-installation which will install the aircraft folders into Flight Simulator. It is configured to be used with your new SkyDecks product. Once you've completed either of these two steps, you're then ready to fly!

To recap, there are two simple steps to a successful installation. Run the Panel Install exe to install the basic panel files to Flight Simulator, and then install a panel configuration file to the aircraft folder of your choice, make some simple aircraft configuration adjustments, or choose the freeware aircraft package. It really is that simple.

Now let's walk you through these steps.

1 – Installing the Basic Panel Files

When you purchased your SkyDecks product, the installation of these basic files should have been automatically installed upon payment verification. If you chose not to install them at that time, then you'll need to run this installation file manually. Upon purchase, it was automatically stored on your hard-drive in the following location: **C:\SkyDecks Panel Design**. Clicking on the "**SD-737NGv3-Install.exe**" will install all the basic files for the SkyDecks Boeing 737-NG panel. This auto-installation program will place all the basic files needed to run the panel into the following default location for Microsoft Flight Simulator:

Program Files\Microsoft Games\Flight Simulator 9

If your system has a different location for Flight Simulator than the default setup, the installation program will continue the installation to the specific location that you have MSFS installed on your system by using registry keys for directions.

2 – Installing the Panel Configuration File

Your next step is to place a panel configuration "alias" file to the aircraft folder of your choice. This will require you to change the default panel folder or delete it entirely for the aircraft you're going to use your new panel with. The aircraft folders for installed aircraft within Microsoft Flight Simulator is located at the following default path:

Program Files\Microsoft Games\Flight Simulator 9\Aircraft

This path is where you will find the aircraft folder that you've chosen. For your convenience, we have placed the correct panel alias file into a panel folder ready for you to copy and paste to your chosen aircraft folder. Simply copy this new panel folder and place it into your chosen aircraft folder. Providing that you have already run the installer in step one, this pre-configured panel alias folder is located at the following path:

Flight Simulator 9\Aircraft\SkyDecks\ConfigurationFiles\SD-B737NG\panel

If you wish to perform this edit yourself, the alias address for the panel is simply:

[fltsim]
alias=SkyDecks\SD-B737NG

If you wish to bypass the configuration file adjustment step, then you may download and install the freeware aircraft package mentioned above. It can be found within the usual library sites, or you may find it from our website by searching the "downloads" tab from our home page. Simply download the aircraft package and run the executable file. That's it! You're now ready to fly your new Boeing 737-NG panel!

Configuration File Adjustments

There are a few aircraft configuration file adjustment that will enhance the enjoyment of your new panel product. Again, if you feel uncomfortable with this step, you can visit our website to download and install the pre-configured aircraft package that was mentioned previously.

You will need to edit the “Electrical” and “Fuel” sections of the aircraft configuration for the plane you’ve chosen to use. Using a text editor, such as “notepad”, copy and paste the following “Electrical” section to overwrite your present electrical section.

```
[electrical]
        ;BusType, MaxAmpLoad, MinVoltage
BusTypes:0=MainBus,1=AvionicsBus,2=BatteryBus,3=HotBatteryBus,4-7=Generator/AlternatorBus(1-4)

max_battery_voltage          = 28
generator_alternator_voltage   = 115
max_generator_alternator_amps  = 80
electric_always_available      = 0

flap_motor        = 0,  5, 10.0
flap_motor        = 4,  5, 10.0
flap_motor        = 5,  5, 10.0
gear_motor        = 0, 10, 15.0
gear_motor        = 4, 10, 15.0
gear_motor        = 5, 10, 15.0
autopilot         = 1,  5, 10.0
avionics_bus      = 0,  2,  5.0
avionics          = 1,  5, 10.0
pitot_heat        = 2,  1,  1.0
additional_system  = 0, 10, 15.0
marker_beacon      = 1,  2,  2.0
gear_warning       = 0,  1,  5.0
gear_warning       = 4,  1,  5.0
gear_warning       = 5,  1,  5.0
fuel_pump         = 0,  4, 10.0
fuel_pump         = 0,  4, 10.0
fuel_pump         = 3,  4, 10.0
starter1          = 0, 10, 15.0
starter2          = 0, 10, 15.0
light_nav         = 0,  1,  1.0
light_beacon      = 2,  1,  1.0
light_landing     = 0,  1,  1.0
light_taxi        = 0,  1,  1.0
light_strobe      = 0,  1,  1.0
light_panel       = 2,  1,  5.0
light_cabin       = 2,  1,  5.0
standby_vacuum    = 0,  1,  5.0
hydraulic_pump    = 4,  5,  8.0
hydraulic_pump    = 5,  5,  8.0
fuel_transfer_pump = 0,  1,  5.0
light_recognition  = 0,  3, 10.0
light_wing        = 0,  3, 10.0
light_logo        = 0,  3, 15.0
```

Edit the "Fuel" section to have two (2) tank selectors and an electric pump:

Please make certain your aircraft is set up for three fuel tanks, otherwise the center tank will be unavailable for selection. Shown is an example for a three tank system. This is specific to the FFX model only. The bold sections shown are the edits for tank selectors and electric pump.

[fuel]
Center1= -2.00, 0.00, 0.00, 4332.00, 7.00
LeftMain= -6.00,-19.00, 0.00, 1300.00, 8.00
RightMain= -6.00, 19.00, 0.00, 1300.00, 8.00
fuel_type= 2
number_of_tank_selectors= 2
electric_pump= 1

Edit the "Autopilot" section to include the following values:

[autopilot]
autopilot_available=1
flight_director_available=1
default_vertical_speed=500.000000
autothrottle_available=1
autothrottle_arming_required=1
autothrottle_takeoff_ga=1
autothrottle_max_rpm=92.000000
pitch_takeoff_ga=14.000000
use_no_default_pitch=1
use_no_default_bank=1
default_pitch_mode=0
default_bank_mode=0
max_pitch=10.000000
max_pitch_acceleration=1.000000
max_pitch_velocity_lo_alt=2.000000
max_pitch_velocity_hi_alt=1.500000
max_pitch_velocity_lo_alt_breakpoint=20000.000000
max_pitch_velocity_hi_alt_breakpoint=28000.000000
max_bank=25.000000
max_bank_acceleration=1.800000
max_bank_velocity=3.000000
max_throttle_rate=0.100000
nav_proportional_control=16.520000
nav_integrator_control=0.250000
nav_derivative_control=0.000000
nav_integrator_boundary=2.500000
nav_derivative_boundary=0.000000
gs_proportional_control=18.520000
gs_integrator_control=0.330000
gs_derivative_control=0.000000
gs_integrator_boundary=0.700000
gs_derivative_boundary=0.000000
yaw_damper_gain=0.737800

Main Panel Layout

1 – PFD, Primary Flight Display
2 – MFD, Multi-Function Display
3 – EID, Engine Indication Display
4 – EFIS, Electronic Flight Instrument Control
5 – MCP, Mode Control Panel
6 – Clock
7 – Master Caution & System Annunciators
8 – Whiskey Compass
9 – Display Selection Panel
10 – Autopilot, Auto-throttle Indicators
11 – Yaw Damper Indicator
12 – Standby Attitude Indicator
13 – Standby Altitude and Airspeed Indicator
14 – Standby RMI Indicator
15 – N1 and Speed Reference Adjustment
16 – Auto-braking Control
17 – Flaps Position Indicator
18 – Landing Gear Control Panel

Display Unit Style Selection

When you begin your flight, the display unit selection panel and welcome screen will be shown as below. Here you may choose between two styles of display units that are available for the Boeing 737 NG: full or compact. The reason there are two display styles is to accommodate pilot cross-certification between same equipment variants.

While some pilots may be certified to fly the full version of the display, pilots within same airline operations may only be certified for analog style of gauges. The compact version closely resembles analog gauge styling, thus allowing for more pilots to fly among same equipment variants. The full version utilizes page views between display units while the compact version does not have this capability and is INOP. Press either Full or Compact to make your selection. Then press the Exit button to close the selection screen.

In version 3.15, you now have the ability to call up the display unit selection screen in the middle of a flight. This may come in handy in saved flight situations. In a saved flight, the full selection screen is the default display. In these situations, one may recall the compact style of display easily. To do this, simply expand the "Landing Gear Limit" chart located in the lower right corner of the panel. With the chart expanded, click on the lower portion of the chart to recall the display selection screen.

PFD, Primary Flight Display Unit

Full or Style #1

1 – Airspeed Indicator Tape
2 – Altitude Indicator Tape
3 – EADI, Electronic Attitude Deviation Indicator
4 – Directional Heading Indicator
5 – Vertical Speed Indicator
6 – CMD Indicator when AP is engaged
7 – Autopilot Function Display Panel

Note: Clicking the white button located in the lower left corner of any display unit will undock and maximize the display. In the maximized view, clicking the button once again will close the display. To toggle the pilot reflections on or off, click on the "set screw" located in the lower right corner of each display unit opposite of the white buttons. Clicking any set screw toggles all reflections at once. The pilot reflections are not available in the maximized view.

Compact or Style #2

1 – Airspeed Indicator Dial
2 – Standby RMI Indicator
3 – EADI, Electronic Attitude Deviation Indicator
4 – Directional Heading Indicator
6 – Autopilot Function Display Panel

MFD, Multi-Function Display Unit

Full or Style #1

1 – Wind Indication Display
2 – Navigation, DME Indication Display
3 – Heading Indicator
4 – VOR1, ADF1: Switched from the EFIS
5 – VOR2, ADF2: Switched from the EFIS
6 – EHSI, Electronic Horizontal Situation Indicator

Note: To Zoom In or Out of the moving map view, place your cursor over the map and use the mouse wheel to toggle the zoom in either display. This function overrides the range knob located on the EFIS Control Panel.

Compact or Style #2

1 – Altitude Indication Dial
2 – Vertical Speed Indication Dial
3 – Wind Indication Display
4 – DME, True Airspeed Indication
5 – Navigation, Ground-speed Indication
6 – VOR2, ADF2: Switched from the EFIS
7 – Heading Indicator
8 – VOR1, ADF1: Switched from the EFIS

EID, Engine Indication Display Unit

Full or Style #1

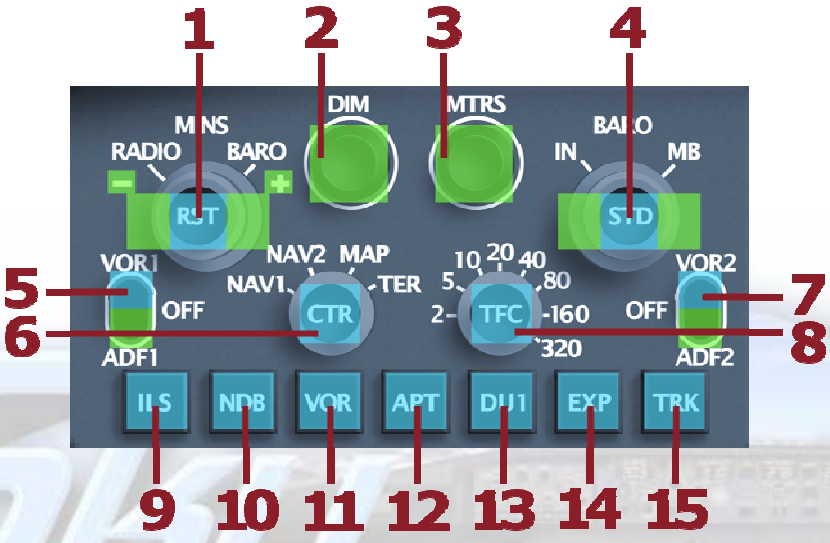
1 – Primary Engine Indication
2 – Secondary Engine Indication
3 – Fuel Level Display, Lbs
4 – Total Air Temperature, Thrust Mode Simulation
5 – Engine Crew Alerts

Compact or Style #2

1 – Primary Engine Indication
2 – Secondary Engine Indication
3 – Fuel Level Display, Lbs
4 – Total Air Temperature, Thrust Mode Simulation
5 – Engine Crew Alerts
6 – Hydraulic Pressure Indication

EFIS Control Panel

The Electronic Flight Instrument System is the heart of your Navigation Display Unit within the Multi-Function display. Here you will make selections for range modes, navaid displays, VOR or ADF selections, barometric scale and decision height settings. Please review each of the following to help familiarize yourself with the EFIS and its features.



EFIS Control Panel, highlighted to show mouse-click areas.

1 – Minimums Knob. The green outer portion of this knob will adjust the Decision Height. Pressing the blue inner portion of the knob clears/activates the DH alert within the PFD, above the EADI on the right. "Approaching Minimums" and "Minimums" will be called out when 80 feet above and at your selected DH, respectively. ***Clicking the "plus" and "minus" symbols at each side of the knob will correct the Radio Height of the aircraft you're using. It is important to set the RH to "zero" while on the ground or the auto-landing function will not work properly.

2 – Display Unit Dimmer Button. Use your mouse wheel or click here to adjust the brightness of all Display Units, MCP Windows, and Radio Stack Windows. There are fifteen positions of brightness to select.

3 – Meters Button. Pressing this button displays the "Meters" altitude boxes next to the standard altitude displays.

4 – Barometric Scale Knob. The green outer portion of this knob will adjust the barometric scale. Pressing the blue inner portion of the knob will select the scale in either Inches of Mercury (In.HG), or Hectopascals (HPA) to be displayed within the lower right corner of the PFD.

5 – VOR1/ADF1 Switch. This switch will display the VOR1/ADF1 arrows within the Navigation Display of the MFD.

6 – Map Mode Control Knob. This knob will select the map mode within the PFD display. "NAV1" displays the Nav1 radio frequency in the upper portion of the MFD with the map off. "NAV2" displays the Nav2 radio frequency with the map off. "MAP" displays the Nav1 radio frequency with the moving map on. "TER" displays the Nav1 radio frequency with the moving map and water definitions on.

7 – VOR2/ADF2 Switch. This switch will display the VOR2/ADF2 arrows within the Navigation Display of the MFD.

8 – Map Range Selector Knob. This knob selects the range for the moving map.

9 – INT Navaids. Displays/clears intersections navaids within the moving map. Off at startup.

10 – NDB Navaids. Displays/clears the NDB navaids within the moving map.

11 – VOR Navaids. Displays/clears the VOR navaids within the moving map.

12 – APT Navaids. Displays/clears the Airport and ILS navaids within the moving map.

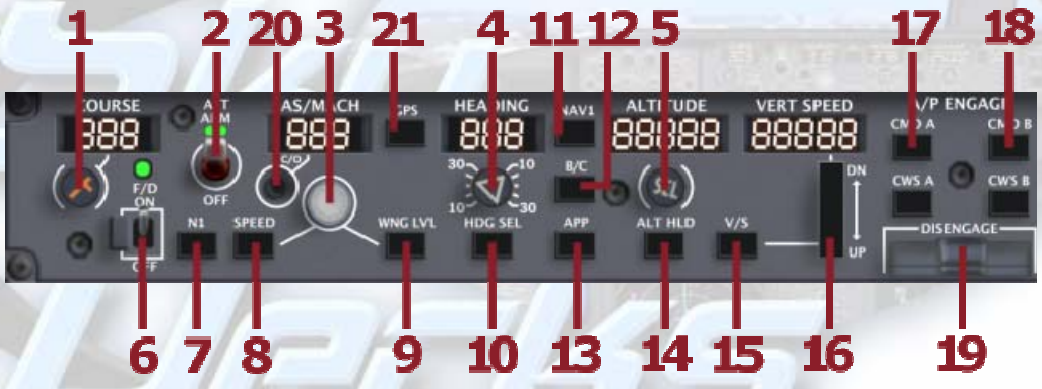
13 – CLR Button. This button will clear all navaids. Reselect each to restore.

14 – EXP Button. Displays the ND compass view within the navigation display.

15 – TRK Button. Displays/clears the track line within the navigation display.

MCP, Mode Control Panel

The MCP or Mode Control Panel commands all aspects of automatic flight. You may select heading altitude, speed & vertical speed rates. Some buttons have been changed for ease of use within MSFS. Please familiarize yourself with each of the buttons listed.



1 – Course Selection Knob. Use this knob to select desired course on the ND.

2 – Auto-Throttle Arming Switch. This switch arms the auto-throttle.

3 – IAS/MACH Selection Knob. The knob will select IAS/Mach target speed.

4 – Heading Selector Knob. Use this knob to select desired heading on the ND.

5 – Altitude Selection Knob. This knob selects the target altitude for the MCP.

6 – Flight Director Switch. This switch toggles the Flight Director within the PFD.

7 – N1 Hold Button. This button engages the N1 hold providing that the N1 set knob on the main panel has been activated and an N1 setting has been selected.

8 – Speed Hold Button. Engages the IAS/Mach hold of the target selected.

9 – Wing Leveler. Levels the wings in automatic flight.

10 – Heading Hold Button. Engages the heading hold function of the MCP.

11 – NAV1 Button. Engages the Nav1 hold function for the selected Nav1 frequency. Select NAV1 before engaging the GPS button to hold a GPS course.

12 – B/C Hold Button. Engages the backcourse hold function of the MCP.

13 – APP Button. Engages the approach mode when ILS frequency is selected.

14 – ALT Hold Button. Engages the altitude hold function for the target altitude selected. If off altitude and button depressed, will switch to V/S until target altitude is acquired.

15 –V/S Hold Button. Engages the vertical speed mode to acquire v/s hold target.

16 - V/S Hold Selector Knob. This knob selects the vertical speed target altitude.

17 – CMD-A Button. This button engages the autopilot master function.

18 – CMD-B Button. This button will engage the autolanding feature. Engage this button between 23 and 29 nautical miles from the end of the runway, with airspeed not higher than 280 knots, Radio Altitude of no more than 3500 feet, and ILS/DME frequency tuned to Nav1. To use this feature, a runway with an "ILS-DME" VOR is required, and not an "ILS" VOR. If you do not know if your runway has an ILS-DME, you can set the frequency and engage the auto land button. If the airspeed selected in the IAS/Mach display window falls immediately to 135 knots indicated, then your runway is NOT an "ILS/DME" runway.

To determine if a runway is an ILS/DME runway, use the MSFS map feature to find your runway, hold your mouse cursor over the ILS apron symbol and a box will appear with the runway information. If it does not specifically state "ILS/DME", then the autoland feature will not work properly. This is due to the fact that speed and control functions of the aircraft are tied into "distance" or DME from the end of the runway.

***Also, it should be strongly noted that the radio altitude needs to be pre-set on the ground and "zeroed" out by using the "minimums" selection settings of the EFIS (see above). If you depart the sim and re-load the aircraft, then this setting will be off again. If this is the case, then simply one-click either the plus or minus symbols that amount of feet required to zero your radio height. Please remember how many feet off from zero the radio altitude is when you zero it out so you can adjust it again if your reload the aircraft while in the air.

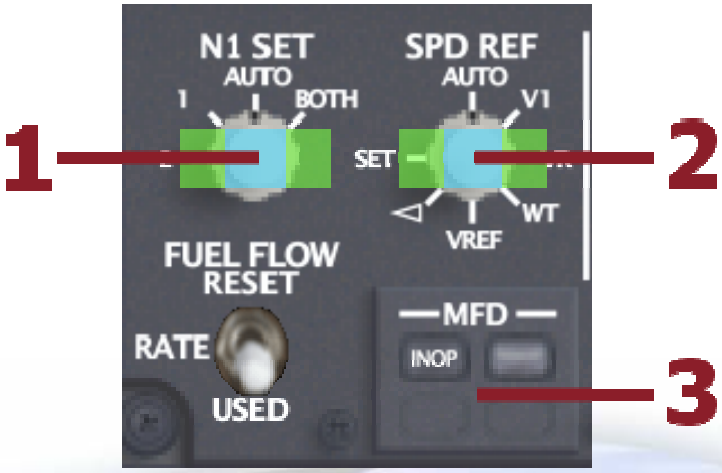
The reason for this adjustment is due to the fact that not all aircraft models in MSFS are designed the same. Because this panel is meant to be used in a variety of aircraft, not all "COG" (center of gravity) points are the same for every aircraft. COG is used to determine Radio Height in flight simulator, and not all models have the same COG reference point, so this is why there is a discrepancy of radio height when the aircraft is on the ground. The point here is to always make certain you have the radio height adjusted to "zero" when on the ground, and you'll know your radio height is set correctly.

19 – Disengage Bar. Depress this button to clear the autopilot of all entries

20 – IAS/MACH Change Over Button. This button is used to switch between IAS and Mach speed hold mode in automatic flight. This button is disabled if the aircraft speed is below Mach.60 or if the aircraft altitude is below FL-260. If below FL-260 and airspeed is Mach.60 or greater, then you may freely select the change over between IAS and Mach. If the aircraft altitude is FL-260 or greater, then the change over occurs automatically and the window displays the Mach hold number. This will be your only display choice for the remainder of your flight above FL-260 or until descent. A descent beyond -250 ft/min will change the window back to IAS for the duration of the descent. If your new altitude is lower than FL-260, then the display will remain IAS, otherwise if above FL-260, when the new lower altitude is attained, the display will revert back to Mach.

21 – GPS Button. Holds a GPS Flight Plan course. Engage NAV1 before selecting GPS,

Engine Display Control Panel



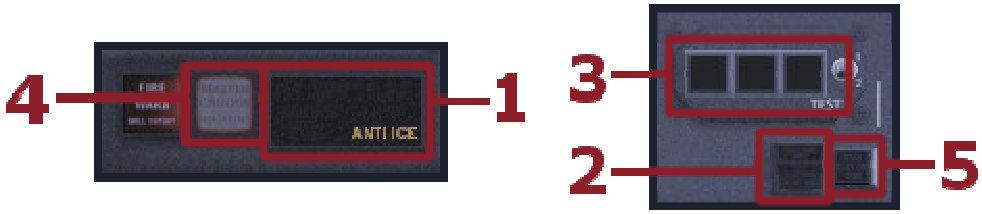
Engine Display Control Panel, highlighted to show mouse-click areas.

1 – N1 Set Knob. Click in the green areas of the knob to switch between “auto” and “both”. Use the mouse wheel in the blue area to set the N1 target bug within the EID’s N1 gauge. Pressing the N1 switch on the MCP will engage the N1 hold. This is a simulated N1 hold and does not correct for pressure at higher altitudes. The gauge is most accurate at lower altitudes.

2 – SPD Reference Knob. Sets the reference airspeed bugs on the airspeed tape within the PFD. To set, click in the green areas to adjust the knob to each Speed Reference selection. Set V1 by using the mouse wheel in the blue area to adjust the Spd Ref bugs. Once set, click the green area to select VR. Adjust to the desired airspeed. The WT reference will display the current weight of the aircraft. Do the same for VREF and the “delta” symbol. Once all four bugs have been set, move the knob to the set position to finalize the settings. The speed reference is now active and v-speed callouts will occur on takeoff.

3 – MFD Display Buttons. ENG, push once to display the secondary engine indications on the EID. SYS, push once to display hydraulic pressure and quantity on the secondary EID page.

Warning Systems



There are three warning systems that are available to alert the pilot to conditions within and surrounding the aircraft. These three systems are the Master Caution/System Annunciator Panel, the Ground Proximity Warning System (GPWS), and the Autopilot/Autothrottle Indicators.

1 – Master Caution/System Annunciator Panel. The Caution and Annunciator panel alerts the pilot to changing conditions within the aircraft. These conditions are associated to various systems controlled on the overhead panel. The six annunciations that will illuminate are: Flight Control, Doors, Fuel, Electrical, APU and Anti-Ice. If an annunciation illuminates, then you may click on the Master Caution light (#4 above) to clear and "store" the annunciation for recall. If the condition that created the warning is corrected, the annunciation will be removed from the system.

To recall the system warning, press the annunciation display (#1 above) to "recall" the warning. In this state, the annunciation will continue to be considered active, and the pilot is responsible for correcting the condition that created the warning. When the associated condition has been corrected, the annunciation will clear and be removed from the system. When a current annunciation is being "stored" for recall, the Master Caution light will not illuminate if a new condition exists, however the associated annunciation will illuminate and may be "stored" for recall with any previous active annunciations. When each is corrected, it will clear the system.

2 – Ground Proximity Warning System. The Ground Proximity Warning System, or GPWS, alerts the pilot to ground altitude in proximity to the aircraft's altitude. The GPWS gauge is located in the space below the autopilot/autothrottle indicators located in space "10" in the panel layout map above. When conditions exist, an audible alert is given for the pilot to make the appropriate decision to correct the condition, and the upper portion of the gauge will begin to flash. You may press the flashing portion of the gauge to remove the visual alert however the audible alert will continue to play. You may press the bottom portion of the gauge to playback the GPWS vocabulary test recording.

Most audible alerts in the GPWS will not be heard until at least 1000 feet radio height (RH), or height above ground level (AGL). The first alerts to be heard will be for terrain. If gear and flaps are not selected, then gear and flaps warnings will be heard. As you continue to descend toward the ground, the warnings will change to alert the pilot to imminent peril. If gear and flaps are selected for landing, then altitude callouts will be given. The system does not differentiate between the ground and a runway, so if you're flying low and are setup for landing, the system will begin callouts regardless if you're on final approach or just buzzing the ground. If Decision Height is selected on the EFIS panel, then you will hear the audible "Approaching Minimums" and "Minimums" callouts. If you have deviated below the glideslope, then audible "Glideslope" warnings will also be heard. There are also alerts for "Bank Angle" beyond 35 degrees of deflection in either direction, a "Windshear" alert for vertical wind-speed changes, and "Sink Rate" warnings for descents greater than -3500 fpm.

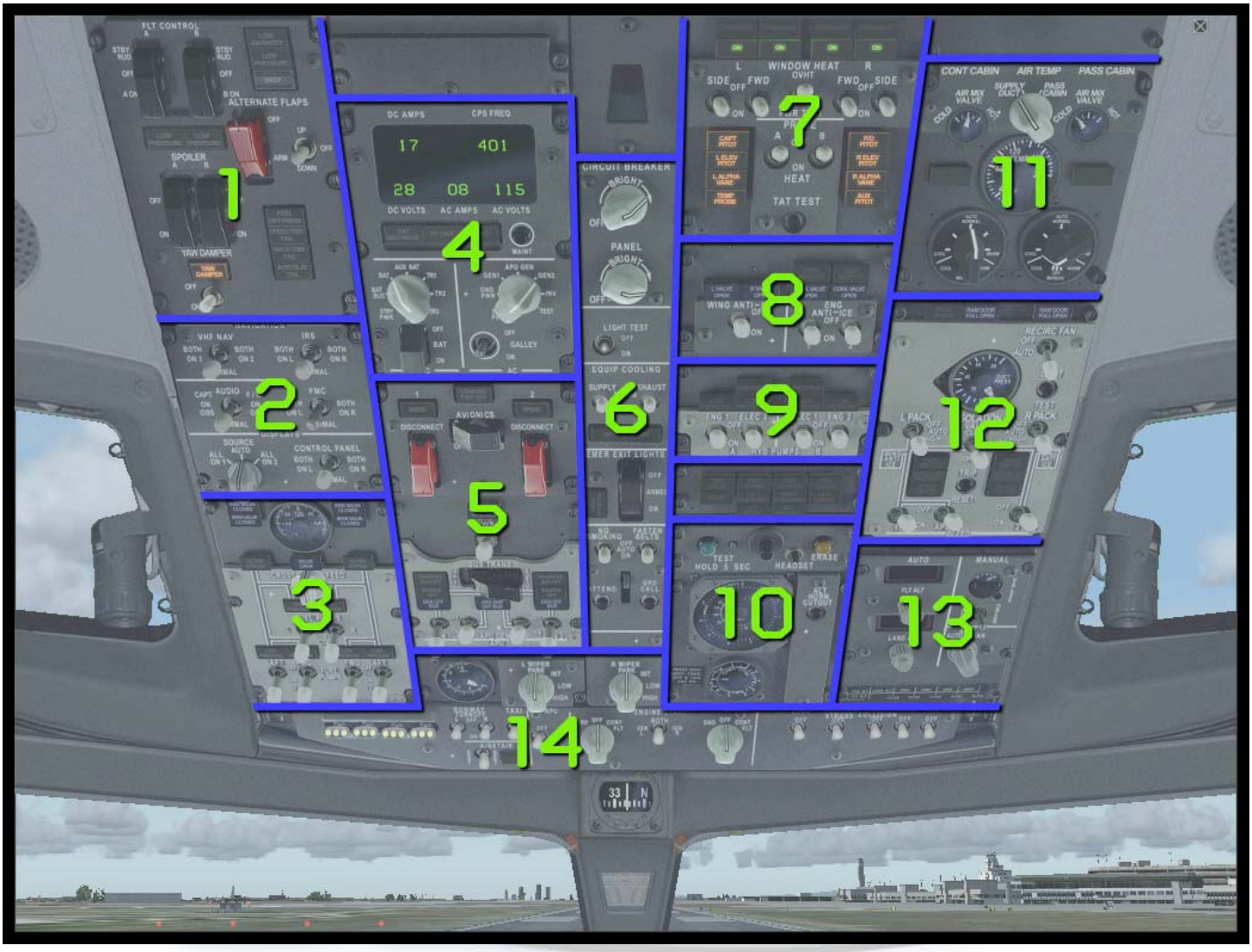
The GPWS warnings may be cut off by using the "Altitude Horn" button on the overhead panel, in section "10" of the overhead layout map, but must be selected only when an alert is not currently playing. This will silence any further alerts. The GPWS will illuminate steady to remind you that the system in currently silenced.

3 – Autopilot and Autothrottle Indicators. These indicators will begin to flash when either the autopilot or autothrottle systems are turned off. Press the associated indicator to clear the warning.

4 – Master Caution Light. Press to clear system annunciations.

5 – Stabilizer Out of Trim. Indicates excessive stabilizer trim.

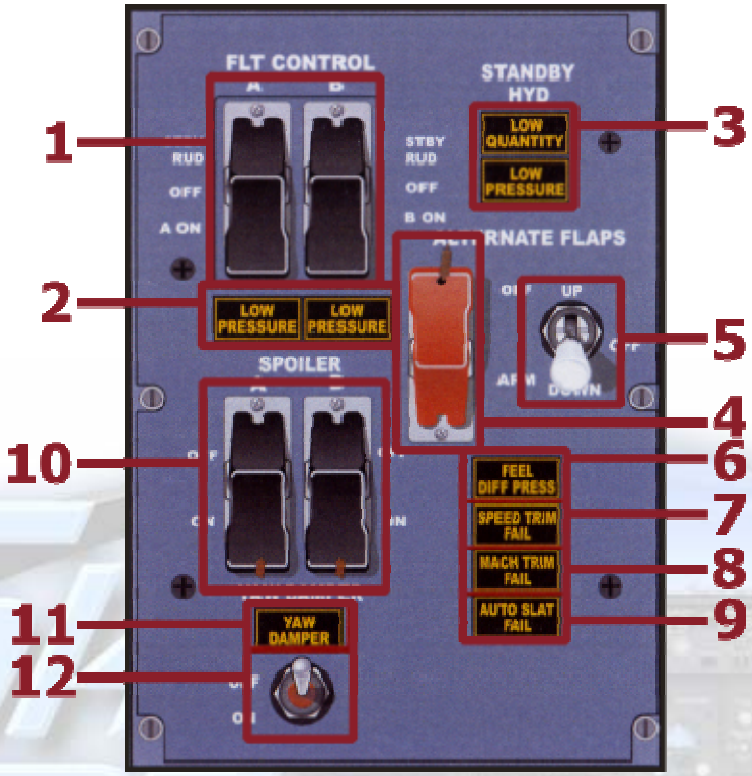
Overhead Layout



1 – Flight Control Panel
2 – Navigation Control, INOP
3 – Fuel Control Panel
4 – Electrical Display Panel
5 – Electrical Control Panel
6 – Auxiliary Controls Panel
7 – Pitot and Window Heat Panel
8 – Anti-Ice Control Panel
9 – Hydraulic Control Panel
10 – Pressurization Display
11 – Temperature Control Panel
12 – Pneumatics Control Panel
13 – Pressurization Control Panel
14 – Lights, Engine Start and Wiper Controls

****Note**** There are several switches within the overhead display that are covered switches. They will not operate unless its respective switch cover has been opened. To open the switch covers, click on the hinged side of the cover to open and close each switch cover. The switch underneath it will then become active for use. Also, the overhead display can be opened by using either the panel icon or by pressing the hat switch upward. If using the panel icon, please close the overhead by pressing the window close icon in the upper right corner of the overhead display.

Flight Control Panel



1 – Flight Control A and B Switches. The switches will not operate unless the switch cover has been opened. To open and close the switch cover, click on the upper or hinged portion of the cover. On/Stby Rud: Opens the flight control valve to the elevator feel, elevator, aileron, and rudder. Off: Closes the flight control valve. Dependant upon hydraulic on/off. These switches must be in the "on" position in order to have flight control supplied to the aircraft.

2 – Low Pressure Lights. Illuminates when pressure to the corresponding flight control unit is low, or when the hydraulic panel switches are off.

3 – Standby Hydraulic Lights. These lights are INOP.

4 & 5 – Alternate Flaps Switches. These switches are INOP.

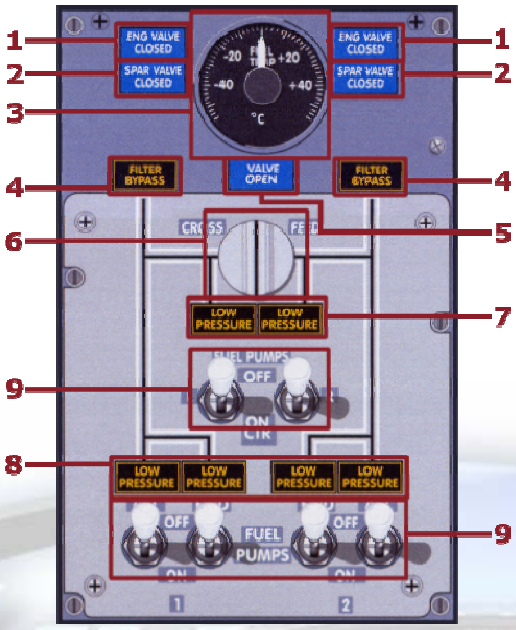
6, 7, 8 & 9 – Feel Differential, Speed Trim Fail, Mach Trim Fail and Auto Slat Fail lights. Illuminated when hydraulic pressure has been switched off.

10 – Spoiler Control Switches. The switches will not operate unless the switch cover has been opened. To open and close the switch cover, click on the upper portion of the cover. On: Hydraulic pressure is supplied to the flight spoilers. Off: Removes hydraulic pressure from the spoilers system. These switches must be on for control of the spoilers.

11 – Yaw Damper light. Illuminates when the yaw damper is not engaged or when hydraulic System-B is off.

12 – Yaw Damper Switch. On: When hydraulic pressure is provided, engages the rudder yaw damper system. Off: The yaw damper is disengaged.

Fuel Control Panel



1 – Engine Valve Closed Lights. Extinguished: The associated engine fuel valve is open. Illuminated Bright: Engine fuel valve is in transit. Illuminated Dim: Engine fuel valve is closed.

2 – Spar Valve Closed Lights. Extinguished: The associated spar valve is open. Illuminated Bright: Engine spar valve is in transit. Illuminated Dim: Engine spar valve is closed.

3 – Fuel Temperature Indicator. Fuel temperature.

4 – Fuel Filter Bypass Lights. These lights are INOP.

5 – Fuel Crossfeed Valve Light. Extinguished: The fuel crossfeed valve is closed. Bright: The fuel crossfeed valve is in transit. Dim: The fuel crossfeed valve is open.

6 – Crossfeed Selector Knob. Controls the operation of the Fuel Crossfeed Valve.

7 – Center Tank Low Pressure Lights. Illuminates to indicate the associated center tank pump output pressure is low and the associated pump switch is on. The light extinguishes when pump output pressure is within limits or when the pump switch is in the off position. Master Caution and Fuel annunciator lights illuminate if both center tank switches are ON and both center tank low pressure lights are illuminated.

8 – Main Tank Low Pressure Lights. Illuminates to indicate the associated main pump output pressure is low or the associated main pump switch is OFF. The light extinguishes when the associated main pump output pressure is within limits. Master Caution and Fuel annunciator lights illuminate if both low pressure lights in one main tank are illuminated.

9 – Fuel Pump Switches. Controls the associated fuel pump. Powered by AC transfer busses. Begin flight with all pump switches on. When the center tank is close to expending, turn the center pump switches off. The main pumps will then be your remaining fuel pumps. If the center pumps are left on, the selector will automatically switch to the mains at around 250 lbs remaining in the center fuel cell.

Electrical Display Panel

1 – DC Meters Selector: Stby Pwr & Bat Bus. Displays voltage only since this is not a source of power. Bat: Displays the battery voltage and amperage of the battery or battery charger when the battery is charging. AUX BAT: Displays the charge of the standby power system in percentage. Starts off low and will quickly build up a seven hour charge. Test: Will display the test message when both AC and DC Meters selectors are in the "TEST" position.

2 – Power Indication Display. Displays DC Voltage and Amperage for the source selected by the DC Meters Selector and is displayed on the left-hand side of the display. Displays AC Voltage and Frequency for the source selected by the AC Meters Selector and is displayed on the right-hand side of the display.

3 – AC Meters Selector. Stby Pwr: Displays the Voltage and Frequency of the AC Stanby Bus. GEN1 and GEN2: Will display the voltage and frequency of the IDG engine generators. Test: Will display test message when both DC and AC Meters selectors are in the "TEST" position.

4 – Battery Discharge Light. Illuminates when an excessive discharge has been detected.

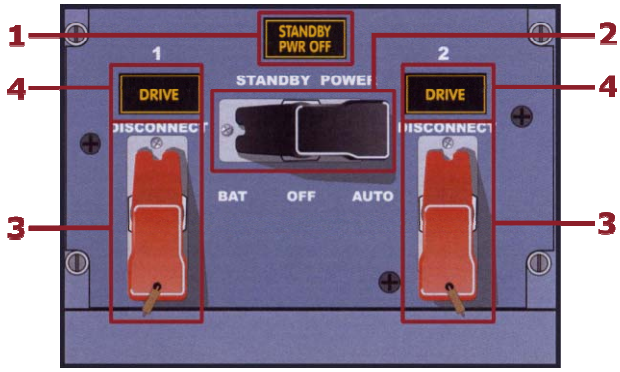
5 & 6 – TR and ELEC Lights. These lights are INOP.

7 – Maintenance Button. This button is INOP.

8 – Battery Switch. On: Energizes the Hot Battery Bus, Battery Bus, AC and DC Standby Buses. Off: Removes power from the Battery Bus and Switched Hot Battery Bus and standby power is in off or auto.

9 – Galley Switch. This switch is used as alternate panel lighting switch for the overhead.

Standby Power Panel



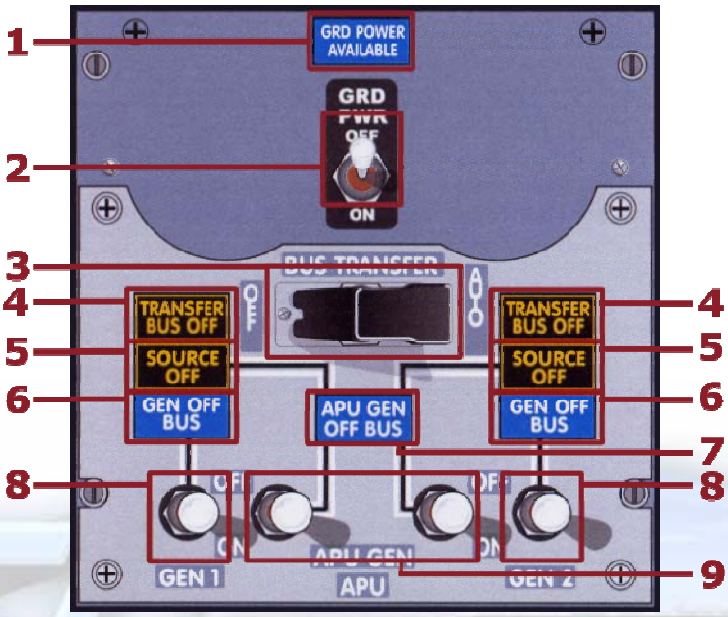
1 – Standby Power Off Light. Illuminates to indicate that the AC Standby Bus, DC Standby Bus or the Battery Bus is not powered.

2 – Standby Power Switch. Auto, AC Standby Bus is powered by Transfer Bus1. OFF: The standby busses are not powered. BAT: DC Standby Bus and the Battery Bus are powered from the batteries. The AC Standby Bus is powered by the batteries.

3 – Generator Drive Disconnect Switches. Disconnects the Internal Drive Generator, IDG. The status of the IDG remains inoperative until fixed on the ground. Use the ground call button while on the ground and the parking brake applied. The ground crew is very helpful!

4 – IDG Drive Lights. Illuminates if an IDG Drive has been disconnected or if the engine is off.

AC Electrical Power Panel



1 – Ground Power Available Light. Ground power is connected to the external AC power receptacle. Apply parking brakes while on the ground for power availability.

2 – Ground Power Switch. Off and On when on the ground and parking brakes are applied.

3 – Bus Transfer Switch. OFF: Prevents the automatic transfer of the transfer busses. AUTO: Enables automatic transfer of power to the transfer busses from any operating IDG Generator or external power. TR1 and TR2 operate in parallel.

4 – Transfer Bus Off Lights. Illuminates to indicate the associated transfer bus is unpowered. The Master Caution and Elec annunciator lights illuminate. Indicates the status of the relay.

5 – Source Off Lights. Illuminates to indicate that no source has been manually selected to power the associated transfer bus or that the selected source is disconnected. Does not indicate that the associated AC transfer bus is de-energized.

6 – Gen Off Lights. Illuminates when the associated generator control breaker is open.

7 – APU Generator Off Light. Illuminates when the APU is running and providing AC power.

8 – Engine Generator Switches. Switches are spring loaded to the center position. OFF: Trips the associated generator relay and disconnects the generator from the associated transfer bus. ON: Connects the associated generator power to the associated transfer bus and removes previously connected power source from the associated transfer bus.

9 – APU Generator Switches. OFF: If only one switch is placed to OFF, the associated SOURCE OFF light illuminates, with the APU continuing to power both AC transfer busses. If the second switch is placed to OFF, the second source light illuminates and disconnects the APU from both AC transfer busses. ON: If neither AC transfer bus is powered by an operating IDG, placing one APU generator switch to ON will cause the APU to power both AC transfer busses. This will disconnect external power if it is connected. The associated SOURCE OFF light remains illuminated until the APU generator switch is placed to ON.

Auxiliary Controls

1 – Panel Lighting Rheostats. Controls the associated panel lighting intensity.

2 – Equipment Cooling Controls. Simulated equipment cooling control.

3 – Emergency Exit Lights. Simulated emergency exit lighting control.

4 – Passenger Signs Panel. Controls the No Smoking and Fasten Seat Belt tones.

5 – Cockpit and Ground Calls. Controls the associated calls. Use Ground Call on the ground, with the parking brakes applied when an IDG Generator needs servicing.

Pitot and Window Heat Panel

1 – Windshield Heat Switch. Toggles the power to and from the windshield heat system.

2 – Side Window Heat Switch. Toggles the power to and from the side window heat system.

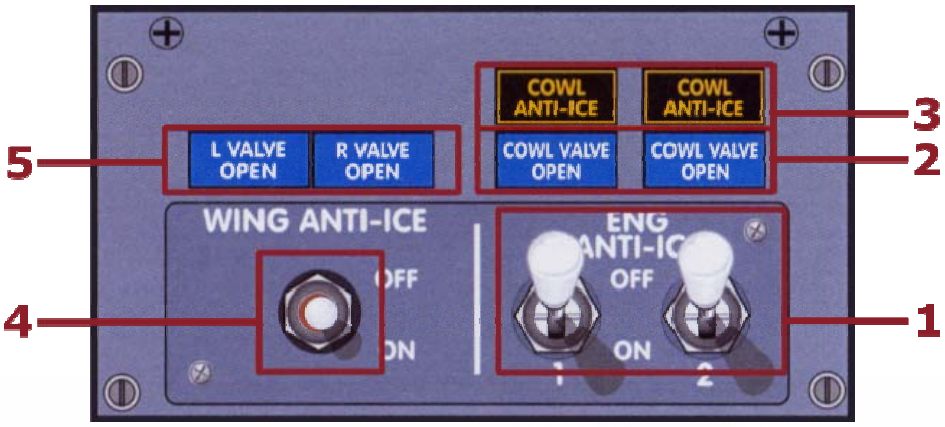
3 – Window Heat Lights. "ON" Illuminates green to indicate that the window heat controller is supplying power to the associated window. The window heat controller will cycle the window heat controller to maintain the window temperature within a certain range.

4 – Window Heat Test Switch. Simulates an overheat condition. All overheat lights illuminate.

5 – Static Pitot Heat Switches. Toggles the power to and from the pitot heat circuits.

6 – Static Pitot Probe Heat Lights. Illuminates when power is removed from the pitot circuits.

Anti-Ice Control Panel



1 – Engine Anti-Ice Switch. Opens and closes the associated engine anti-ice valve.

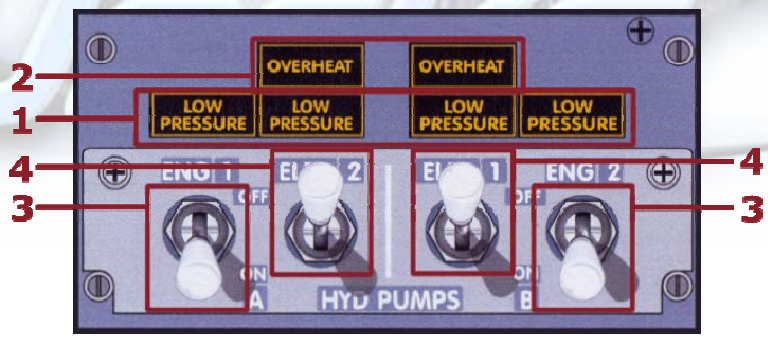
2 – Cowl Valve Open Lights. Bright: Control Valve is in transit. Dim: Control valve is open.

3 – Cowl Anti-Ice Lights. These lights are INOP.

4 – Wing Anti-Ice Switch. Opens and closes the associated wing anti-ice control valves.

5 – Wing Anti-Ice Valve Open Lights. The associated wing anti-ice control valve is in transit. DIM: The associated wing anti-ice control valve is open.

Hydraulic Control Panel



1 – Low Pressure Lights. Illuminates to indicate the pump is supplying low pressure.

2 – Overheat Lights. These lights are INOP.

3 – Engine Hydraulic Switches. ON: De-energizes the blocking valve solenoid and allows the associated pump to supply hydraulic pressure.

4 – Electric Hydraulic Switches. ON: Provides electrical power to the electric pumps.

Temperature Control Panel

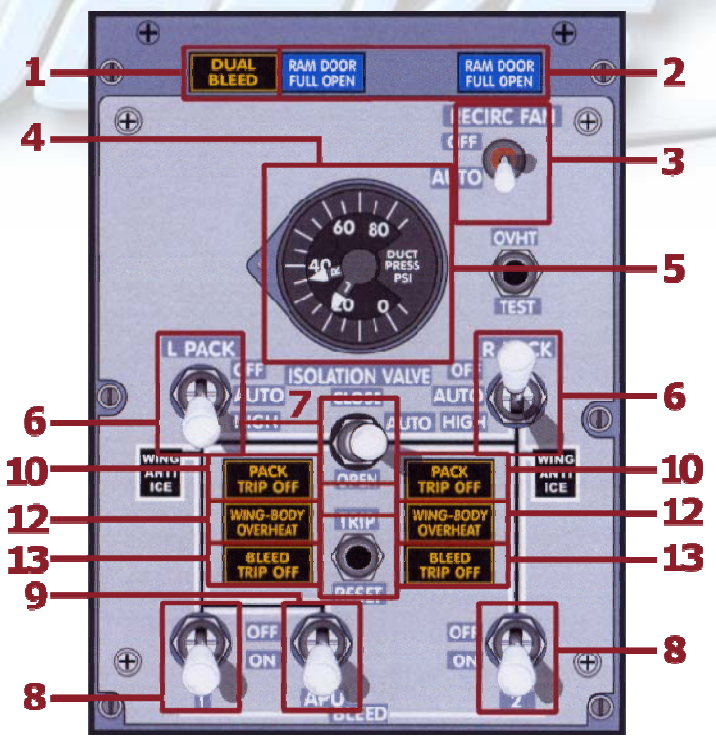
1 – Temperature Source Selector. Selects the temperature source for the temperature gauge.

2 – Temperature Selectors. Selects the temperature for the associated zone.

3 – Air Mix Valve Position Indicators. Indicates the position of the associated air mix valves.

4 – Duct Overheat Lights. These lights are INOP.

Air Conditioning/Pneumatics Control Panel



Air Conditioning/Pneumatics Control Panel

Continued

1 – Dual Bleed Light. Illuminates: Engine1 bleed switch is on and the APU bleed valve is open. Engine2 bleed switch is on and the APU bleed valve is open and the isolation valve is open.

2 – Ram Door Full Open Light. Illuminates when the ram door is in its full-open position.

3 – Recirculation Fan Switch. AUTO: Both fans will operate if the pack switches are in the AUTO position. One recirculation fan will shut down in flight if either pack switch is on high. Both recirculation fans will shut down in flight if both pack switches are on high. Both recirculation fans operate on the ground if either pack switch is on high. One recirculation fan will shutdown on the ground if both pack switches are in the high position.

4 – Pneumatic Duct Pressure. Indicates the pressure in the left and right pneumatic ducts.

5 – Overheat Test Switch. Press to test the wing-body, overheat detector circuitry. Both wing-body overheat lights will illuminate.

6 – Pack Switches. AUTO: The associated pack produces normal air flow when both packs are operating. The associated pack will produce high flow if the opposite pack is not operating provided the aircraft is in flight and the flaps are up. If the APU is supplying pneumatic air and only one pack is operating, the pack will supply high flow if both engine bleed switches are off. HIGH: The associated pack is regulated to produce high flow. The APU will regulate to the high flow mode when either pack switch is in high. OFF: The associated pack is shut down.

7 – Isolation Valve Switch. CLOSE: The isolation valve is closed. OPEN: The valve is open. AUTO: The isolation valve will open if any pack or engine bleed switch is in the off position. The isolation valve is closed if all pack and engine bleed switches are ON. The isolation valve is not affected by the APU bleed switch.

8 – Engine Bleed Switches. OFF: Closes the associated pressure regulator and shutoff valve. ON: Opens the pressure regulator and shutoff valve if the respective engine is operating.

9 – APU Bleed Switch. OFF: Closes the APU bleed valve. ON: Opens the APU bleed valve if the APU is operating.

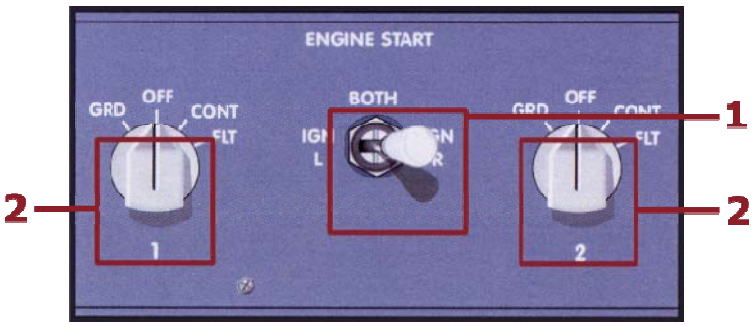
10 – Pack Lights. These lights are INOP.

11 – Trip Reset Switch. This switch is INOP.

12 – Wing-Body Overheat Lights. Illuminates during the wing-body heat test as above.

13 – Bleed Trip Off Lights. These lights are INOP.

Engine Start Panel



1 – Ignition Selector. Select either Left, Right or Both igniters for each engine.

2 – Engine Start Switches. GRD: Opens the respective start valve and provides ignition to the respective engine. The START VALVE OPEN light illuminates within the EID display.

OFF: The start valve is closed and no ignition is provided.

CONT: Provides engine ignition using the igniter selected by the ignition switch. This position is used for takeoff, landing, turbulence, and while using engine anti-ice.

FLT: Supplies continuous ignition using both igniters. This position bypasses the ignition selection switch and is used for air starts, severe turbulence, and moderate to severe icing or precipitation, hail or sleet conditions.

Auxiliary Power Unit

The APU will provide power for the aircraft when the main engines are off or when ground power is not available. To perform a startup for the APU make certain that the batteries are on and that at least one of the main tank fuel pumps are on. Switch the APU to the “Start” position. The APU can be shut down by selecting the fuel pumps to off or by switching the unit to “OFF”

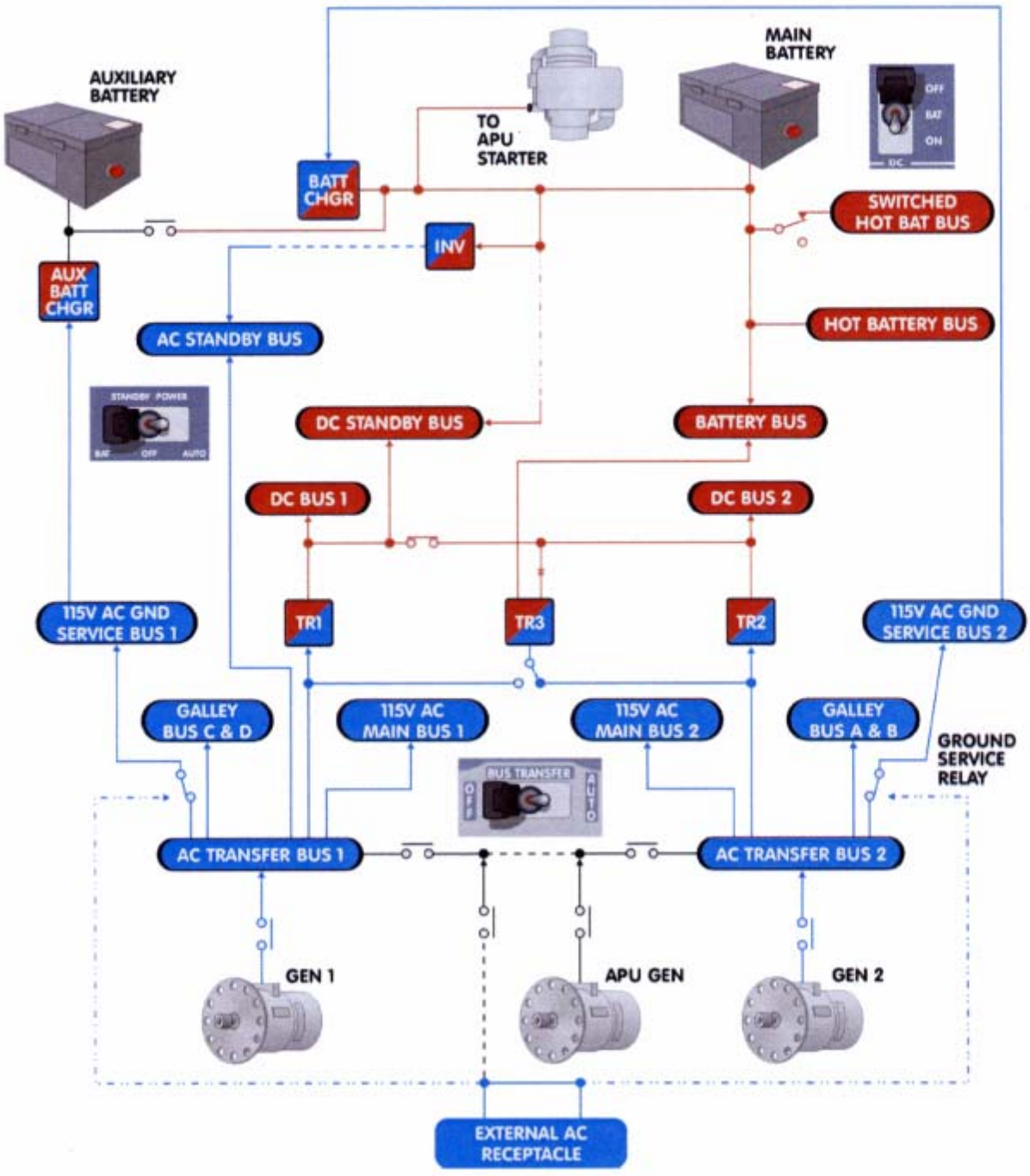
Known Issues

There are a few known issues, primarily involving the animated objects of the windshield wipers and the flight control yoke animations. The possibility exists for a large hit in frame-rates when using either of these animations around intense scenery add-ons or with multiple air traffic in the vicinity. In a year or so, when the new generation of computers become available this might not be much of an issue. But for the time being, please use discretion when activating either of these animations.

Saved-flights: the compact version of the display unit will not be available in a saved flight. If you have saved a flight with the compact style of display unit, the full style will be loaded instead. This is because a saved flight bypasses the “welcome” screen where you would normally choose which style to use. Of course you can open your saved flight and then switch aircrafts to bring up the welcome selection screen yet again.

*** Due to the large number of image files within this panel product (there are 1049 .bmp image files!), there will be a slight delay at start-up while the panel files load and when you originally call-up the overhead panel. This is normal for a panel of this size. It is recommended that you have at least a half gig of memory installed on your system, and that you have a good video card installed as well. Once loaded, the panel is very smooth.

Electrical System



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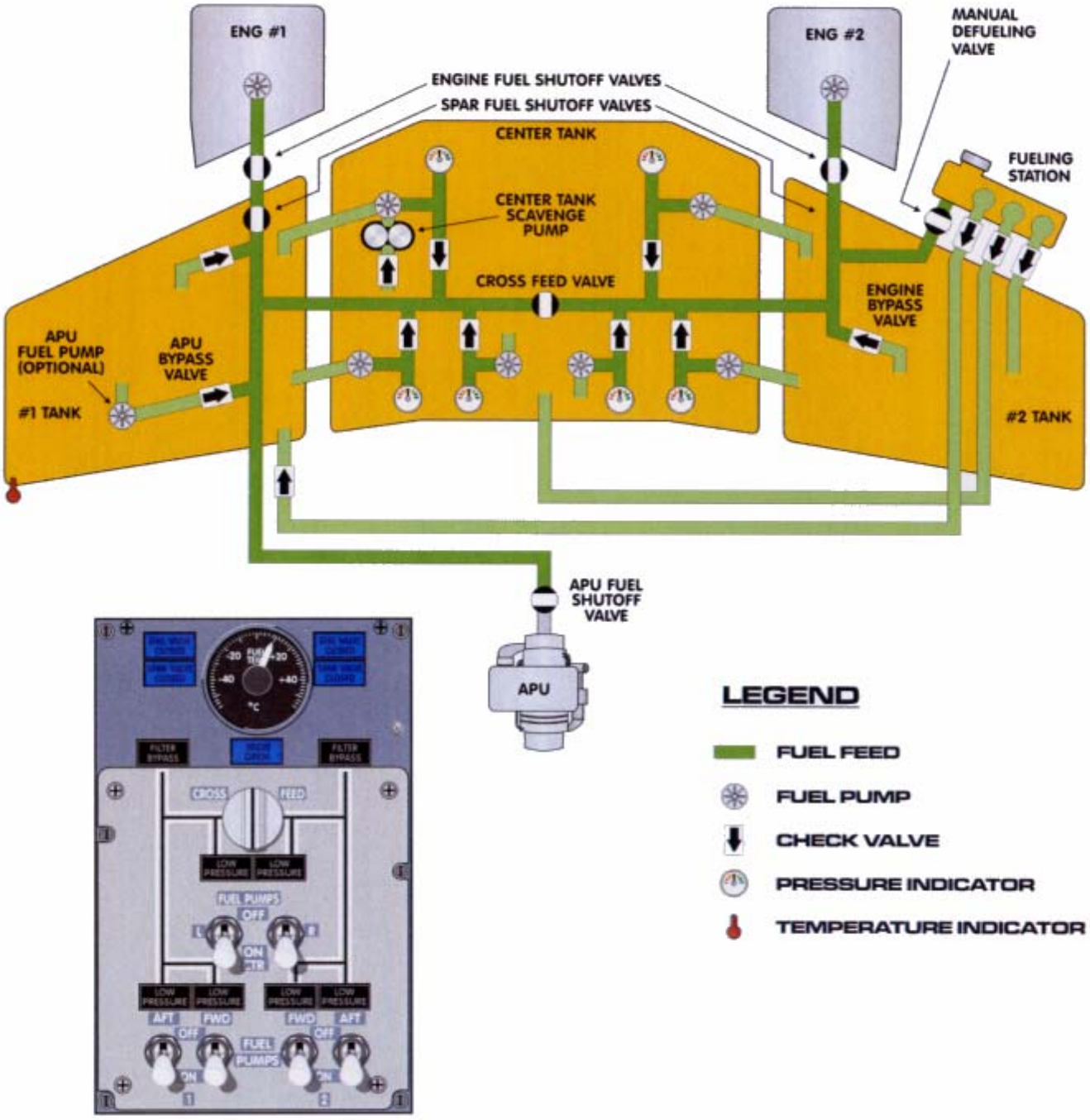
Fuel Flow System



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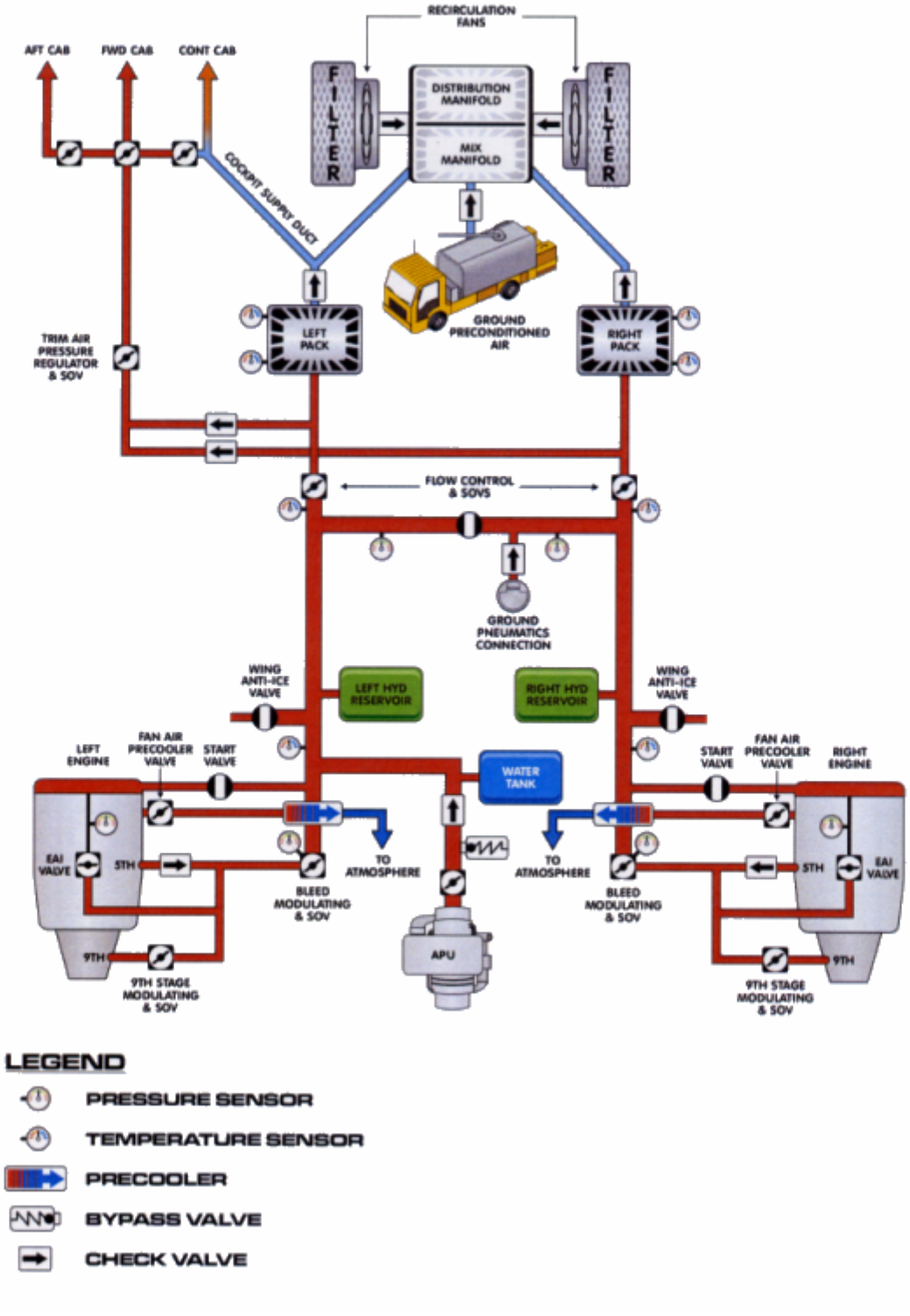
Pneumatics System



LEGEND

- PRESSURE SENSOR
- TEMPERATURE SENSOR
- PRECOOLER
- BYPASS VALVE
- CHECK VALVE

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Reference Information

SkyDecks Panel Design, 737-800 Next Generation
REFERENCE INFORMATION

For detailed instructions on how to fly this aircraft, see the **Aircraft Information** articles in the **Learning Center.** For standard procedures, see the Checklists tab.

AIRCRAFT WEIGHTS

Maximum Operating Takeoff Weight	**174,200 lbs**
Maximum Landing Weight	**143,300 lbs**
Zero Fuel Weight	**138,300 lbs**
Empty Weight	**90,710 lbs**
Total MSFS Aircraft Weight With Full Fuel	**171,036 lbs**

NOTE: To adjust fuel load, on the **Aircraft** menu, click **Fuel and Load**

OPERATING SPEEDS

V_{MO} - Maximum Operating Speed	**340 KIAS**
M_{MO} - Maximum Operating Speed, Mach	**.82 Mach**
Turbulent Air Penetration Speed	**280 KIAS/.73 Mach**
V_{LO} - Maximum Gear Operating Speed	**235 KIAS**
V_{LE} - Maximum Landing Gear Extension Speed	**270 KIAS/.82 Mach**

MAXIMUM FLAP PLACARD SPEEDS

Flap Degrees	KIAS
1	**260**
2	**250**
5	**230**
10	**210**
15	**200**
25	**190**
30	**175**
40	**162**

V-SPEED REFERENCE CHART, 737-800

V_1 - Takeoff Decision Speed Dry Runway, Flaps 5
Standard Temperature, Sea-Level Pressure Altitude

174,200 lbs	**157 KIAS**
135,000 lbs	**150 KIAS**

Standard Temperature, 5,000' Pressure Altitude

174,200 lbs	**159 KIAS**
135,000 lbs	**152 KIAS**

V_R - Rotation Speed Dry Runway, Flaps 5
Standard Temperature, Sea-Level Pressure Altitude

174,200 lbs	**161 KIAS**
135,000 lbs	**154 KIAS**

Standard Temperature, 5,000' Pressure Altitude

174,200 lbs	**163 KIAS**
135,000 lbs	**156 KIAS**

V_2 - Takeoff Safety Speed Dry Runway, Flaps 5
Standard Temperature, Sea-Level Pressure Altitude

174,200 lbs	**169 KIAS**
135,000 lbs	**162 KIAS**

Standard Temperature, 5,000' Pressure Altitude

174,200 lbs	**171 KIAS**
135,000 lbs	**164 KIAS**

V_{REF} - Landing Approach Speed Flaps 30, Gear Down

142,200 lbs	**150 KIAS**
135,000 lbs	**145 KIAS**

NOTE: For explanations of speeds used on this tab, see "V-speeds" in the **Learning Center Glossary**.

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