

BOEING 787-9 DREAMLINER



Version 1.01 for X-Plane 10 and 11 (Click [here](#) for version changes)

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Introduction: The intention of this document is to describe in a basic way the available functions that can be activated in this aircraft. Since X-Plane presents a limited range of datarefs, some functions are impossible to achieve without an advance programming knowledge. Integrated programs such as PlaneMaker however make possible the creation of a realistic cockpit with customized displays. My intention was to create a realistic model with the same technology used natively within the simulator, such as the default Boeing 737-800 and 747-400 models. The Boeing 787 however is a very different aircraft with a different philosophy. Simple things like selecting a radio is normally turning a knob and swapping frequencies, however now is a keypad with a screen in which you can select different options. Other changes include the FMC where in many traditional aircraft it is a separate unit with its own buttons and screen, now it is part of a multifunctional display that can be navigated with a pointer.

In this version you can enjoy all the functions from any other default aircraft in X-Plane and the unique design of the exterior and interior of the 787.

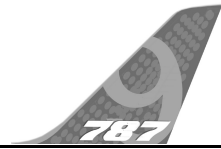
Hopefully in the future there will be added features that will improve the realism of the aircraft that weren't implemented into the current version.

Thank you for purchasing this aircraft.

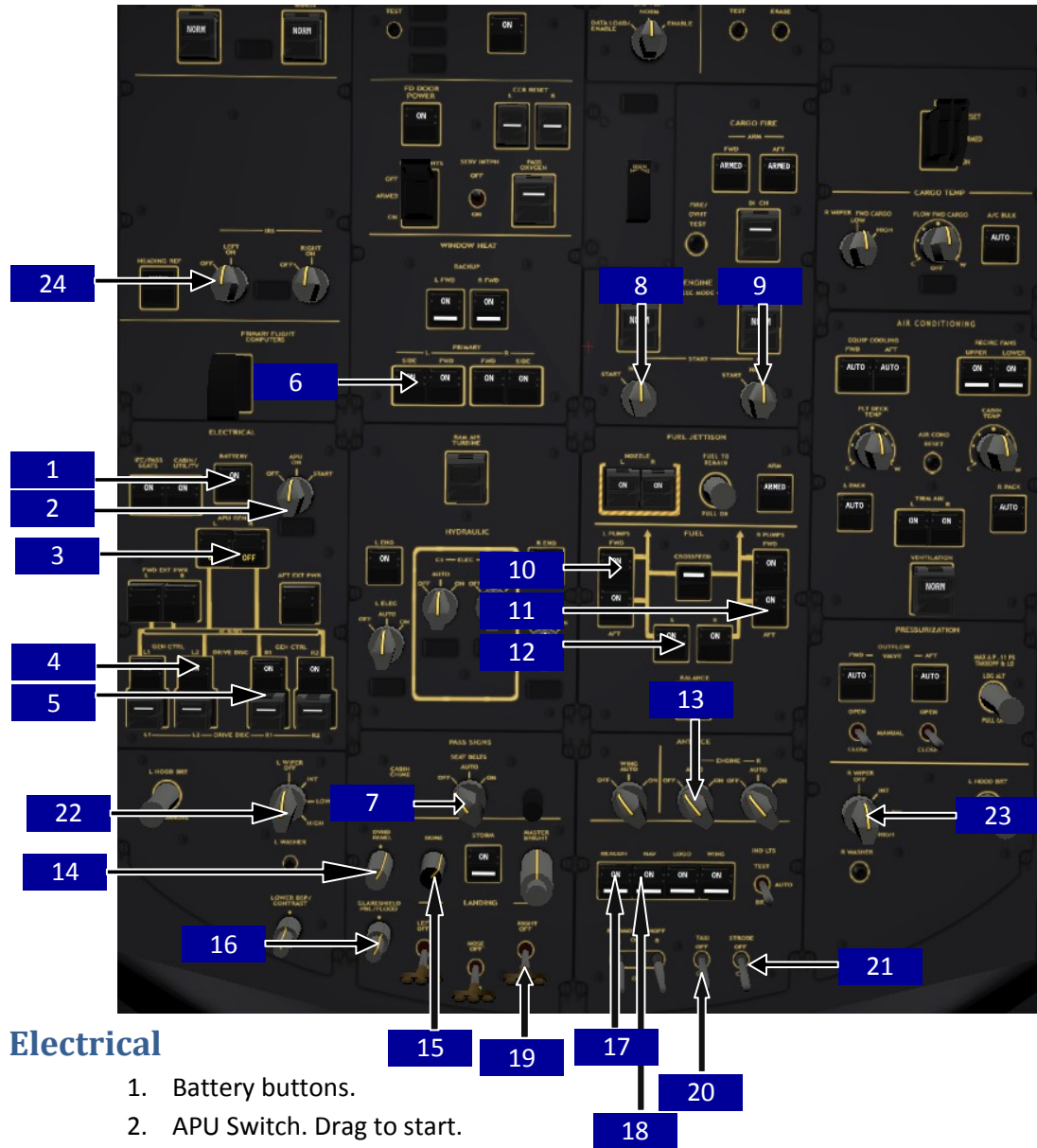
Kind Regards,

Magknight

Overhead Panel



This is a diagram showing the available systems in the overhead panel.



Electrical

1. Battery buttons.
2. APU Switch. Drag to start.
3. APU generators buttons.
4. Generators Control Left buttons.
5. Generators Control Right buttons.

Window Heat

6. Primary window heat buttons.

Passenger signs

7. Seat Belts (Off-Auto-On) Push to toggle.

Engine Start Switches

8. Left Engine Starting Switch.
9. Right Engine Starting Switch.

Fuel Pumps

10. Left fuel pumps buttons.
11. Right fuel pumps buttons.
12. Center fuel pumps buttons.

Anti-Ice

13. Anti-Ice Switches (One button for the wing, Two buttons for the engines)

Lights

14. Overhead Panel - Controls overhead panel light brightness.
15. Dome – Controls Dome light brightness.
16. Glareshield PNL/FLOOD – Controls glareshield flood light brightness.
17. Beacon lights.
18. Navigation lights.
19. Landing lights switches.
20. Taxi lights switch.
21. Strobe lights switch.

Windshield wipers

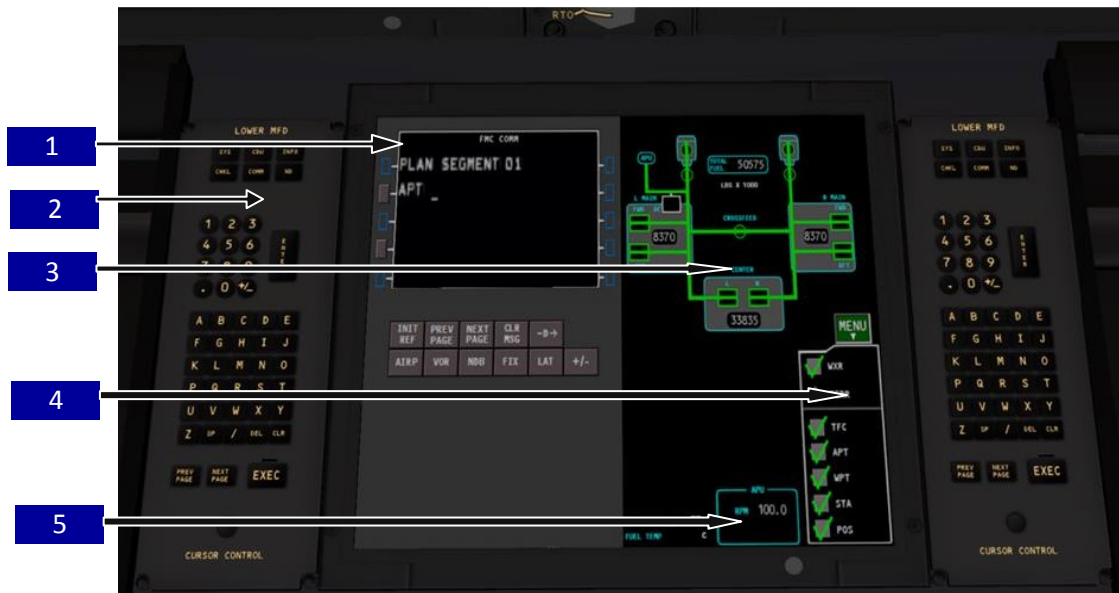
22. Wiper switch left. Drag to activate.
23. Wiper switch right. Drag to activate.

Avionics

24. Avionics switches.

Lower Multifunction Display





Flight Management Computer

1. X-Plane 10/11 default FMS. Set in the style of the Boeing 787 CDU.
2. X-Plane 10/11 default FMS keypad. The default keypad has been adapted to the 787 lower MFD keypad.

Fuel Synoptic Display

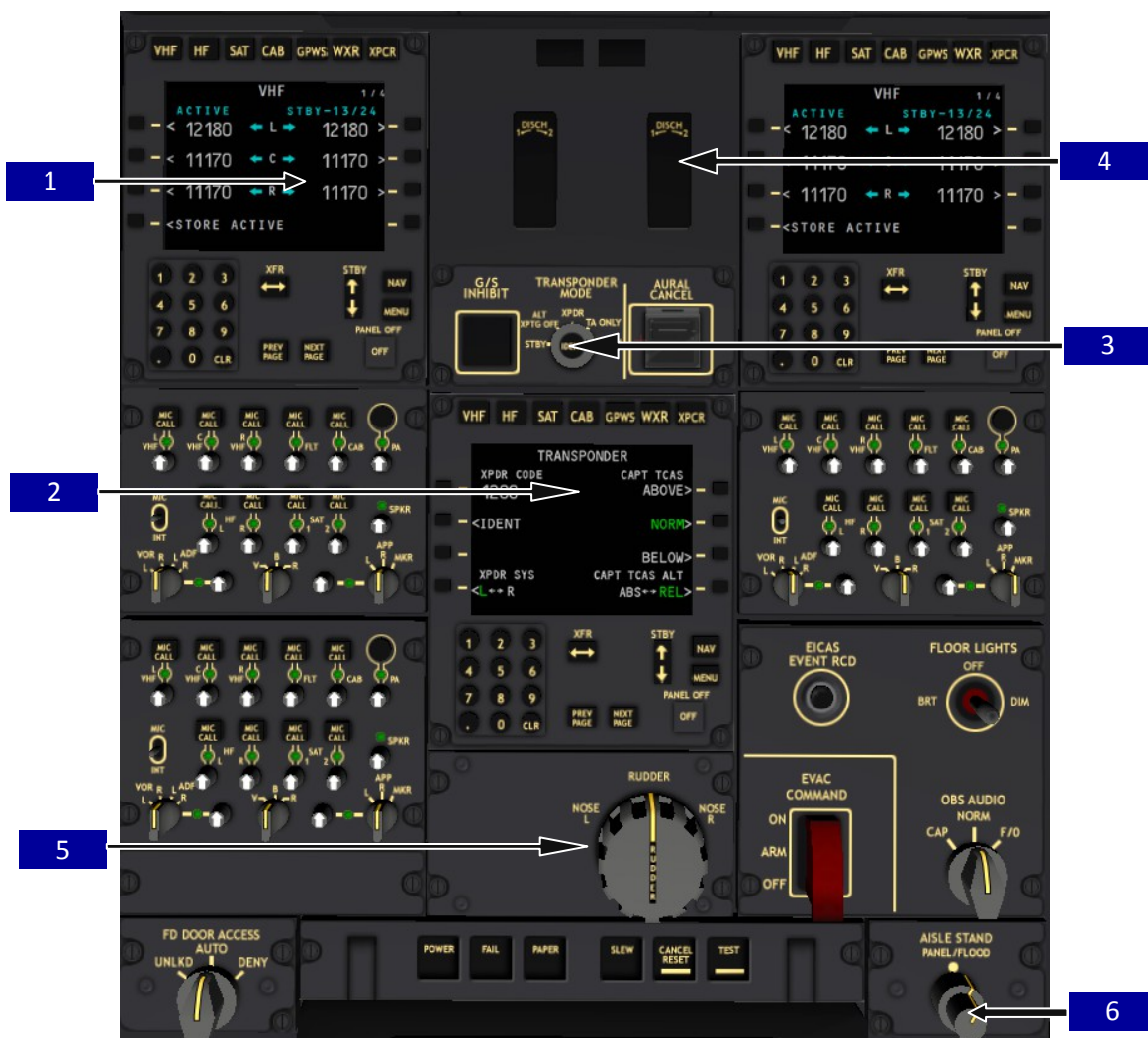
3. Displays fuel pumps states, fuel tanks levels (In lbs.) and total fuel.

Menu key and information selection

4. This menu actually belongs to the navigational display, but it's located here for space reasons. It activates the different information in the navigational display, like TCAS, weather, airports, VORs, etc.
5. APU rpm indicator.

Aft Aisle Stand



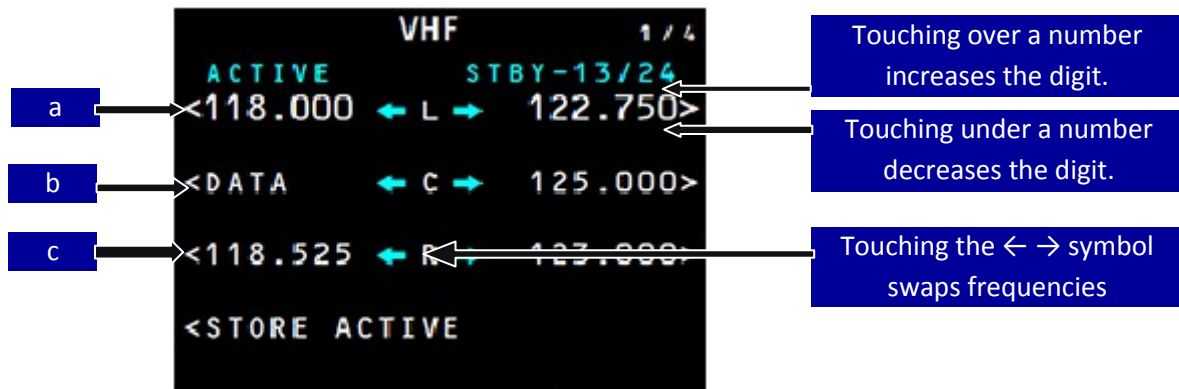


Radios and transponder

Radio Stack:

Radio standby frequencies have to be selected as a touchscreen device. Clicking over the numbers changes the frequencies. With three frequencies available:

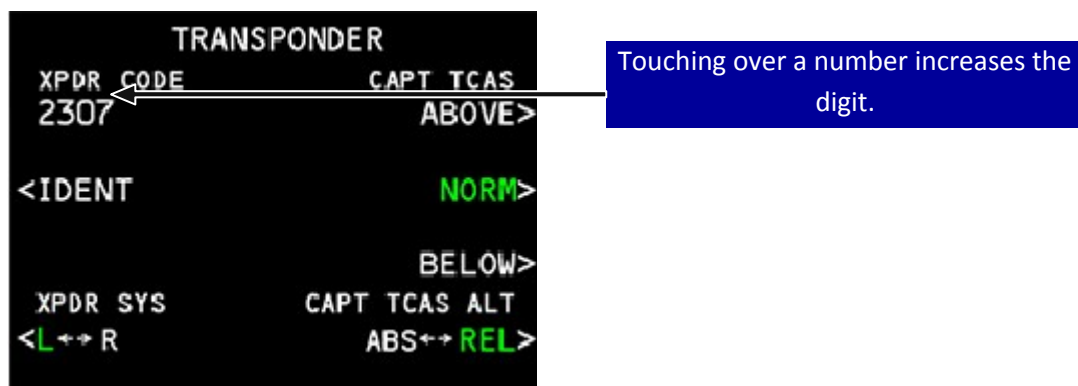
- COM 1 – Set in the top position.
- NAV 1 – Set in the middle position.
- NAV 2 – Set in the lower position.



Note: Active COM frequency also appears in the PFD at the left of the clock.

2. Transponder

Similar to the radios, the transponder functions as a touchscreen device.



Note: XPDR code also appears in the PFD at the left of the clock.

3. Transponder mode switch

Changes transponder mode: Off, test, standby, Tcas TA/RA.

Engine Fire Switches

- Engine fire switches 1 and 2. Push to activate in case of engine fire.

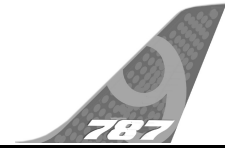
Rudder Trim

- Drag left or right to move rudder trim. The status is display in the EICAS screen.

Lights

6. Aisle Stand Panel Flood. Rotate to graduate light brightness.

Main Panel

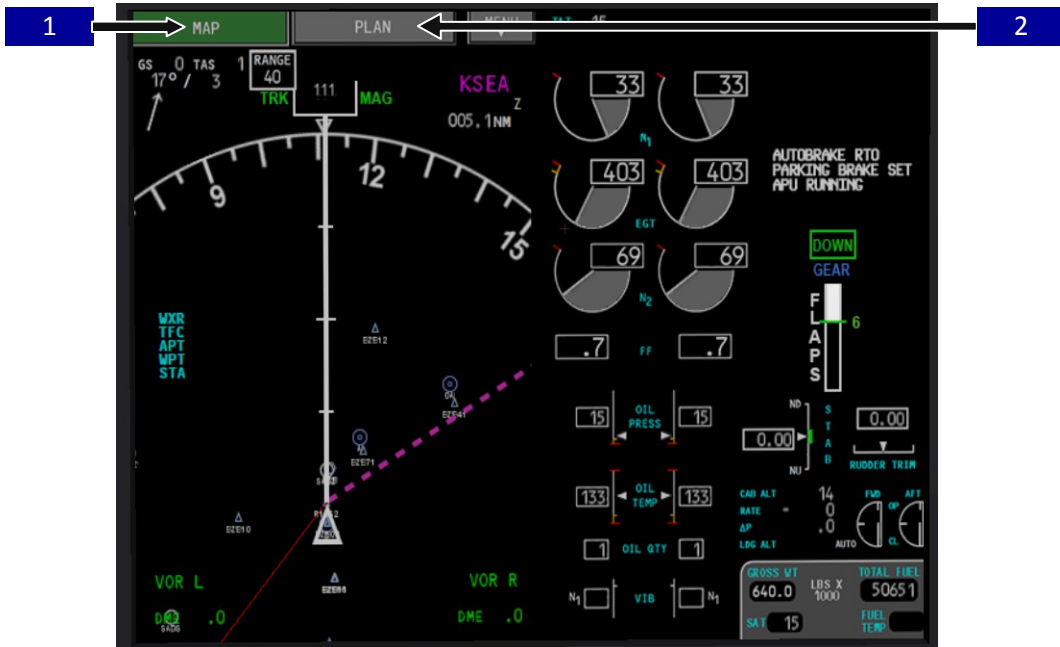


Primary Flight Display



1. Clock play/stop button. Hidden button. Works exactly like clock button in glareshield.
2. Clock reset button.

Navigation Display and EICAS



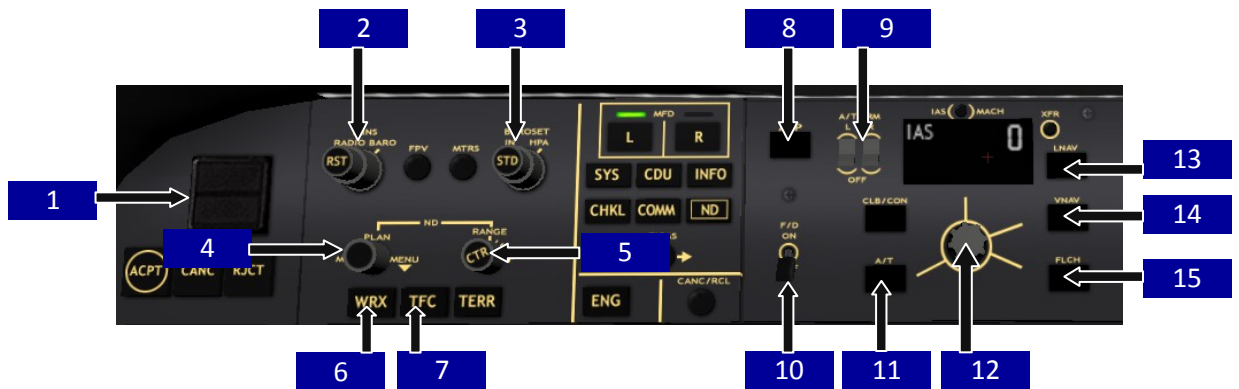
1. Map Button. Push to select Map display.
2. Plan Button. Push to select Plan display.

Glareshield



1. Clock Button. Push to start/stop clock.

Autopilot



1. Master Warning Button.
2. Radio altimeter knob. Rotate to adjust. Press STD button for standard altitude.
3. Baro set knob. Rotate to adjust.
4. Map/Plan select. Click or rotate to select.
5. Range knob. Rotate to change map range in Navigational display.
6. Weather Button. Push to select weather schematics in Navigational display.
7. Traffic Button. Push to select TCAS schematics in Navigational display.
8. Autopilot select. Push to activate autopilot (Flight Director must be on).
9. Autothrottle Switch.
10. Flight Director Switch.
11. Autothrottle button.
12. Speed Selector knob. Rotate to select speed.
13. LNAV button. Arms LNAV FMC navigation. If other mode is selected It will first disengage that.
14. VNAV button. Activates vertical navigation programmed in FMC.
15. Flight level change. Push to activate.



16. Heading select knobs.

- a) Outer knob bank select
- b) Inner knob heading select.

17. Heading Hold button. Push to activate.

18. Vertical speed rotator. Rotate to select vertical speed.

19. Vertical Speed button. Push to activate V/S mode.

20. Altitude increment selector knob.

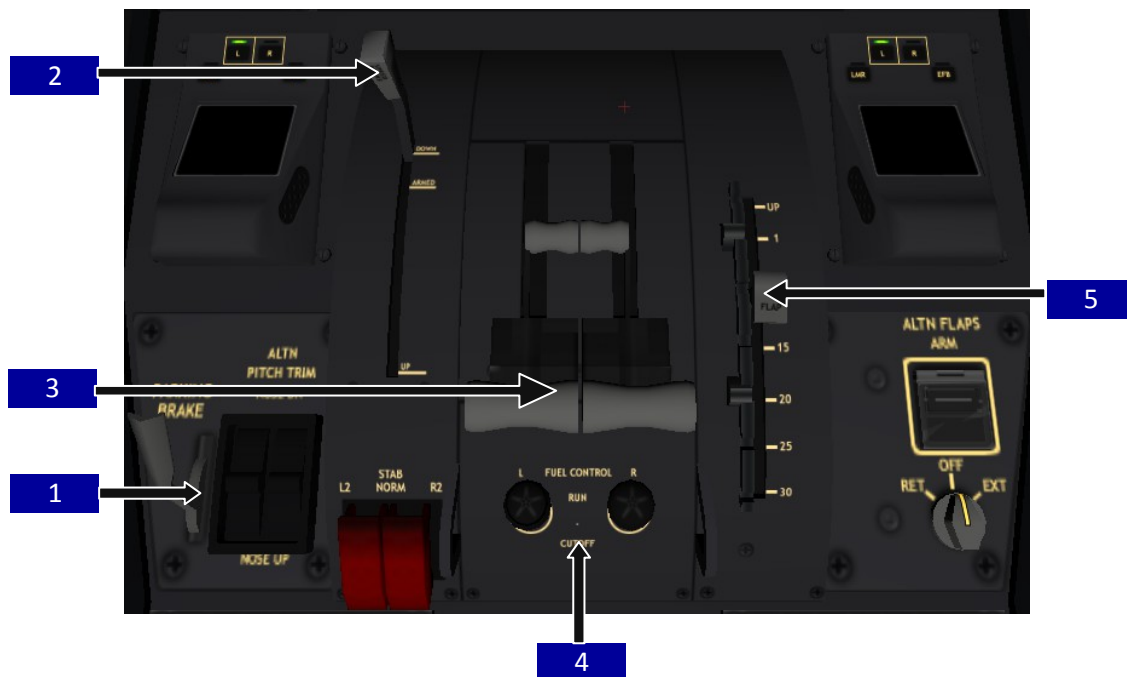
- a) Outer knob: Drag to move altitude fast.
- b) Inner knob: Rotate to fine select altitude.

21. LOC button. Selects VOR/LOC as a source and activates ILS. If other mode is selected, it disengages that first.

22. Altitude hold button. Push to hold current altitude. Push again to release altitude hold.

23. Approach button. Push to activate selected approach.

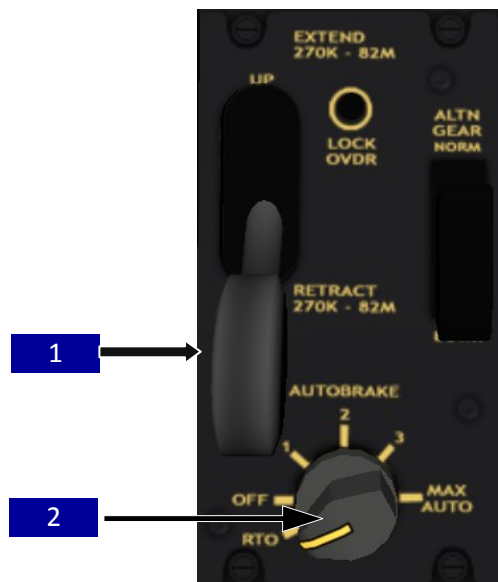
Throttle panel



1. Parking brake. Push to select.
2. Speed brake handle. Drag to select.
3. Thrust levers. Drag to select.
4. Fuel control levers. Push to activate.
5. Flap selector control. Drag to select.

Gear and auto brake control

1. Gear handle. Push to toggle.



2. Auto brake control. Drag to select.

Navigation

Since this aircraft uses the default XP10 and XP11 FMCs, this chapter won't describe how to program a flight in the flight management computer, but it will cover the use of the autopilot once a flight is programmed in it.

In this case we will plan a flight starting at runway 16R at Boeing factory at Paine Field (KPAE) in a direct route to the ISOGE intersection and an approach to runway 13R at Boeing Field (KBFI).

Before Takeoff

Once the flight is programmed into the FMC we need to activate the following systems:



1- Flight Director (F/D) Switches

The flight director switch activates the flight director steering indications on the Primary Flight Display (PFD). FLT DIR is displayed in the PFD. It is necessary to activate the autopilot.

2- Airspeed IAS/MACH Window

Displays the selected airspeed for takeoff and climb.

3- Heading Window

Displays the selected heading, in this case runway heading.

4- Heading Hold Button

The Heading Hold button activates the HDG HOLD indication on the PFD.

5- Altitude Window

Displays the selected target altitude. This is the reference altitude for altitude alerting and level off. In this flight the selected altitude must be the altitude for the next waypoint in the FMC. In this case 4000 ft.

The selected altitude displays on the PFD altitude tape and the vertical situation display (VSD).

6- V/S Switch

Engages Vertical Speed as selected in the V/S window.

Displays V/S in the PFD pitch flight mode annunciator.

When the selected altitude is reached, the pitch mode changes to (ALT).

After Takeoff

Once the aircraft is in the air, the following systems can be activated>



The IAS/MACH window will go blank when the switch is activated.

Displays VNAV SPD in the PFD pitch mode as the plane climbs to the programmed altitude.

VNAV SPD will activate FLCH mode.

5- Flight Level Change (FLCH) Button

Pushing will activate Flight Level Change Mode. The plane will pitch and accelerate to reach the desired altitude selected in the Altitude Window. It will also be activated with VNAV SPD.

Note: It is necessary to engage the Autothrottle Switch for the aircraft to follow the VNAV SPD

6- Autothrottle Arm Switch

Pushing activates the Autothrottle mode. It has to be activated at FLCH or VNAV modes.

Cruise

Once the aircraft has reached the pre-programmed altitude in the FMC the following systems are activated:



1- Altitude Hold Switch

When the aircraft reaches the programmed altitude, the FLCH light extinguishes it and the ALT HOLD switch light turns on.

VNAV ALT is displayed in the PFD pitch mode.

Descent

As the aircraft reaches the Point of Descent (P/D) the aircraft can descend either in VNAV or V/S mode:



- 1- With VNAV mode activated, the ALT HOLD switch must be pushed to disengage the aircraft from the current altitude. The aircraft will descend to the next waypoint.

VNAV PTH is displayed in the PFD pitch mode annunciator.

2- V/S Switch

Pushing will activate Vertical Speed mode as selected in the V/S window.

Displays V/S in the PFD pitch mode annunciator.

Approach

As the approach is reached the aircraft can make an approach using the FMC or by tuning the Runway localizer.



1- RNAV, ILS, etc.

In LNAV mode, pressing the APP button will arm the approach mode.

G/S will display (in white) in the PFD pitch mode annunciator. The current pitch mode is display in green.

As the plane intercepts the glide slope, the aircraft will descend in approach mode.

G/S will display in green in the PFD pitch mode annunciator.

Loc is display in green in the PFD.



2- Localizer (ILS approach)

With the navigation source set to NAV1, pressing the APP button will arm the LOC mode. The aircraft will follow the selected ILS frequency in the NAV1 radio.

G/S will display (in white) in the PFD pitch mode annunciator. The current pitch mode is display in green.

As the plane intercepts the glide slope, the aircraft will descend in approach mode.

G/S will display in green in the PFD pitch mode annunciator.

Loc is display in green in the PFD.

Appendix

Since the aircraft does not have a proper TO/GA mode yet, it is recommended that the takeoff is performed with throttles at manual to avoid excessive throttle. Here is the calculation of N1% according to the temperature and pressure of the airport.

Max Takeoff %N1 Based on anti-ice on or off

| AIRPORT OAT | | AIRPORT PRESSURE ALTITUDE (1000 FT) | | | | | | | | | | | | |
|-------------|-----|-------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| °C | °F | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 70 | 158 | 81.2 | 81.8 | 82.4 | 81.9 | 81.3 | 80.7 | 80.2 | 79.6 | 78.6 | 78.2 | 77.2 | 76.1 | 74.9 |
| 60 | 140 | 84.8 | 85.6 | 86.3 | 85.9 | 85.6 | 85.1 | 84.8 | 84.5 | 83.8 | 83.6 | 82.9 | 82.0 | 81.1 |
| 55 | 131 | 86.5 | 87.3 | 88.0 | 87.7 | 87.4 | 87.0 | 86.8 | 86.5 | 85.8 | 85.7 | 85.2 | 84.4 | 83.7 |
| 50 | 122 | 88.1 | 89.0 | 89.7 | 89.4 | 89.1 | 88.8 | 88.6 | 88.4 | 87.8 | 87.7 | 87.2 | 86.6 | 85.9 |
| 45 | 113 | 89.4 | 90.4 | 91.3 | 91.1 | 90.8 | 90.5 | 90.3 | 90.1 | 89.6 | 89.6 | 89.2 | 88.6 | 87.9 |
| 40 | 104 | 90.4 | 91.4 | 92.3 | 92.2 | 92.1 | 91.9 | 91.8 | 91.6 | 91.2 | 91.2 | 90.8 | 90.3 | 89.8 |
| 35 | 95 | 91.3 | 92.3 | 93.3 | 93.2 | 93.1 | 93.0 | 93.0 | 93.0 | 92.6 | 92.6 | 92.3 | 91.8 | 91.3 |
| 30 | 86 | 91.0 | 92.6 | 94.3 | 94.2 | 94.1 | 94.0 | 94.0 | 94.1 | 93.7 | 94.0 | 93.7 | 93.3 | 92.8 |
| 25 | 77 | 90.3 | 91.9 | 93.6 | 94.1 | 94.6 | 94.8 | 94.9 | 94.9 | 94.8 | 95.0 | 94.9 | 94.6 | 94.3 |
| 20 | 68 | 89.6 | 91.3 | 92.9 | 93.4 | 93.9 | 94.4 | 95.1 | 95.7 | 95.6 | 95.8 | 95.7 | 95.5 | 95.3 |
| 15 | 59 | 88.9 | 90.6 | 92.2 | 92.7 | 93.2 | 93.7 | 94.4 | 95.0 | 95.4 | 96.1 | 96.3 | 96.1 | 95.9 |
| 10 | 50 | 88.3 | 89.9 | 91.5 | 92.0 | 92.5 | 93.0 | 93.6 | 94.3 | 94.7 | 95.4 | 95.8 | 96.1 | 96.4 |
| 5 | 41 | 87.6 | 89.2 | 90.8 | 91.3 | 91.8 | 92.3 | 92.9 | 93.5 | 93.9 | 94.6 | 95.0 | 95.4 | 95.7 |
| 0 | 32 | 86.9 | 88.5 | 90.1 | 90.6 | 91.1 | 91.5 | 92.2 | 92.8 | 93.2 | 93.9 | 94.3 | 94.6 | 94.9 |
| -10 | 14 | 85.4 | 87.0 | 88.6 | 89.1 | 89.6 | 90.0 | 90.7 | 91.3 | 91.7 | 92.3 | 92.8 | 93.1 | 93.4 |
| -20 | -4 | 84.0 | 85.5 | 87.1 | 87.6 | 88.0 | 88.5 | 89.1 | 89.7 | 90.1 | 90.8 | 91.2 | 91.5 | 91.8 |
| -30 | -22 | 82.4 | 84.0 | 85.6 | 86.0 | 86.5 | 86.9 | 87.5 | 88.1 | 88.5 | 89.2 | 89.6 | 89.9 | 90.2 |
| -40 | -40 | 80.9 | 82.4 | 84.0 | 84.4 | 84.9 | 85.3 | 85.9 | 86.5 | 86.8 | 87.5 | 87.9 | 88.2 | 88.5 |
| -50 | -58 | 79.3 | 80.8 | 82.3 | 82.8 | 83.2 | 83.6 | 84.2 | 84.8 | 85.1 | 85.8 | 86.2 | 86.5 | 86.8 |

Version 1.01 changes

For XP10:

- FLCH (Flight Level Change) annunciator has been added at the pitch modes in the Primary Flight Display.

For Both Simulators:

- Autopilot constants have been improved significantly. Now the autopilot follows the HDG, LNAV and LOC modes accordingly.
- LOC button now selects NAV1 as the navigation source. If other mode is active, first disengages that mode, then it will have to be selected again.
- LNAV button now selects FMC as the navigation source. If other mode is active, first disengages that mode, then it will have to be selected again.
- The NAV1, NAV2 and FMC annunciators on the PFD are no longer clickable. Source is now selected directly by the autopilot LOC and LNAV buttons.
- Marks before missing in the 360°, 090°, 180° and 270° course on the Map mode in the Nav Display have been added.
- Wingflex was blending the wings in excess at high speeds. It has now been corrected.
- Liveries:
 - American livery has been corrected. The bottom of one wing was different from the rest.
 - British Airways coat of arms has been corrected and has no longer a white box.
 - Factory livery has now GE logo on engines.

Version 1.02 changes

- Groundspeed, TAS and wind vector corrected in the ND.
- Transponder Ident now available. Transponder digits can now be changed up and down.
- Airspeed in PFD now hides at mach speeds instead of showing '0'.
- Flaps maneuverability issue solved. The aircraft now follows easily the glideslope and acts quickly at lower speeds.

- Artificial stability now corrected at lower speeds. (Better handling)
- Tail light now available. Tail will light up with the logo button in the cockpit. There is now no necessity of a special night texture for each livery. The external night texture is the same for all.
- Yoke hides now pressing 'Y' on the keyboard. (Only XP11)
- Vertical speed display now hides in VNAV.
- A checklist is now available.
- Cockpit windows have been modified to better dimensions.
- Pitot tubes are now bigger.
- Minor texture and light correction in the tail lights.
- Speedbrake now arms and deploys at landing.
- Normal map has been updated.
- Air China livery add to the package.
- United livery gold cheatline corrected. (Didn't match in the nose)
- Engines nacelles shape corrected and intake reflections removed.

End of document