

DC-10

COLLECTION

HD 10-40

OPERATIONS MANUAL

Expansion for Flight Simulator X: Steam Edition



CONTENTS

Flight Simulator X: Steam Edition must be correctly installed on your PC prior to the installation and use of this DC-10™ simulation.

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INTRODUCTION

The F-Lite range has been designed to provide aircraft that are not only extremely high in detail and visually impressive but also less demanding to fly than today's most complex procedural simulators.

DC-10™ Collection HD 10 to 40 for Flight Simulator X: Steam Edition has been designed by Commercial Level Simulations and Just Flight to provide an aircraft that is great to look at and very straightforward to fly.

The DC-10 began its flying career in 1971 and soon proved that three engines were better than two – or four! With a passenger capacity of 380 and a range of over 2,500 miles, it was a revelation. Even today the DC-10 continues to ply its trade in passenger, cargo and tanker variants. Now, by popular demand, the team at CLS has produced a fantastic version of this iconic aircraft for Flight Simulator X.

Features

General

- DC-10 Collection HD 10 to 40 includes 3 high quality liveries, covering 8 aircraft variants.
- Fully flyable 3D virtual cockpit
- Custom aircraft views, including wing views
- Includes many animations such as flaps, spoilers, ailerons, elevators, rudder, engine fans, operating passenger and cargo doors, and operating thrust reversers. Even the ailerons and elevators droop when engines are shut down.
- High fidelity DC-10 sound set based on GE CF6 engines
- Dynamic wingflex
- XML landing gear animation – wheels stay flat on the ground
- Animated large cargo door on freighter variants

Flight model

- Highly tuned DC-10 flight dynamics for the different aircraft variants, based on detailed documentation and experience from an air carrier FAA Level-C 3-axis simulator
- Flight models based on Boeing specifications
- 'True Feel' format for correct performance and feel
- Flight testing based on FAA simulation requirements
- Compatible with jetway and baggage truck operations

Panels

- Full analogue pilot, co-pilot and flight engineer panels
- Also included are the overhead, throttle quadrant and radio stack panels
- Flight engineer's station has expanded pop-ups for easier viewing
- Limited function FMC which allows for SIDs and STARs in the Flight Simulator database, radio and navigation frequency entry, V-speed calculation, 'direct to' waypoint features, progress display, estimated fuel on board and more

Variants

DC-10™-10

The DC-10-10 was the original passenger version of the DC-10, equipped with General Electric CF6 turbofan engines. A total of 122 were built between 1970 and 1981.



DC-10™-10F

The DC-10-10F is a cargo version of the DC-10-10, modified to include a large fuselage freight door.



DC-10™-30

The DC-10-30 is a long range version of the DC-10-10. Larger fuel tanks increase its range and an additional main gear fitted to the centreline of the fuselage supports the increased aircraft weight. This was the most popular variant of the DC-10, with a total of 163 built between 1972 and 1988.

Models are included for the GE CF6-50C and GE CF6-50C2 engine configurations.



DC-10™-30F

The DC-10-30F is a cargo version of the DC-10-30, modified to include a large fuselage freight door.

Models are included for the GE CF6-50C and GE CF6-50C2 engine configurations.



DC-10™-40

The DC-10-40 is a long range version of the DC-10-10, similar in design to the DC-10-30 but fitted with Pratt & Whitney JT9D engines.

Models are included for the JT9D-20 and JT9D-59A engine configurations, and with and without the centre gear.



DC-10™-40F

The DC-10-40F is a cargo version of the DC-10-40, modified to include a large fuselage freight door.

Models are included for the JT9D-20 and JT9D-59A engine configurations.



Liveries

DC-10-10

- White

DC-10-10F

- White

DC-10-30

- Air France
- KLM

DC-10-30F

- White (GE CF6-50C2)

DC-10-40

- White (no centre gear)
- White (JT9D-D20)

DC-10-40F

- White (JT9D-D20)

INSTALLATION

Installation is handled by Steam after purchase of the product. After purchasing the product the files will be downloaded and installation into the Scenery Library will be automatic.

Accessing the aircraft

To access the aircraft in FSX:

1. Click on 'Free Flight'
2. Select 'Commercial Level Simulations' from the 'Publisher' drop-down menu
3. Select 'McDonnell Douglas' from the Manufacturer drop-down and choose one of the variants

Tick the 'Show all variations' box to see all the available liveries.

Updates

Updates to the product will automatically be deployed, downloaded and installed via Steam to all users who own the product.

Technical Support

To obtain technical support (in English) please visit the Support pages at justflight.com. As a Just Flight customer you can obtain free technical support for any Just Flight or Just Trains product.

For support specifically on the Steam version of the add-on please contact Dovetail Games.

<https://dovetailgames.kayako.com>

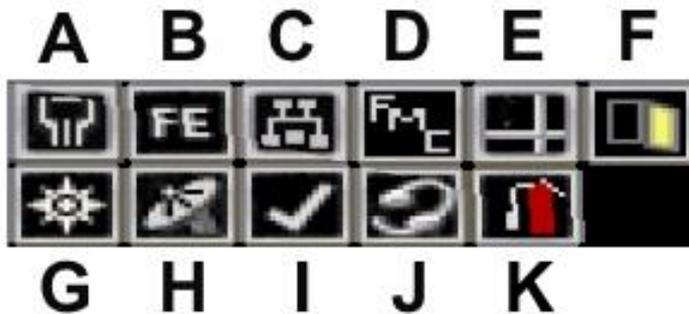
Regular News

To get the latest news about Just Flight products, sign up for our newsletter at justflight.com/newsletter.

You can also keep up to date with Just Flight via Facebook (www.facebook.com/justflight) and Twitter (www.twitter.com/justflight).

AIRCRAFT OPERATION

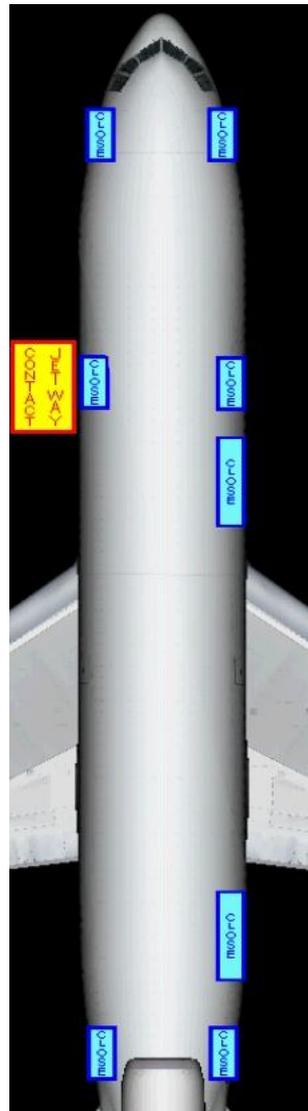
Icons



Click on the icons to display the following features:

- A – Pedestal
- B – Flight engineer's panel
- C – Overhead panel
- D – FMC
- E – Rudder and aileron trim knobs
- F – Door panel
- G – Map
- H – Default GPS
- I – Kneeboard
- J – ATC window
- K – Engine fire extinguisher handles

Door panel



Passenger variant



Cargo variant

The 2D door panel can be used to control the passenger and cargo doors.

Clicking on one of the CLOSE icons will open/close the corresponding door. A CONTACT JETWAY icon will be shown if you are flying a passenger variant of the DC-10 and clicking on the icon will request the jetway if you are parked at a suitable spot.

PILOT'S PANEL



1. Magnetic compass

Often called the 'Whiskey Compass' – a switch on the overhead will turn on the backlight.

2. GPWS lamp

Flashes when there is a warning being generated by the GPWS (Ground Proximity Warning System).

3. Master warning lamp

Lights up to warn when flight conditions such as stall speed and overspeed are reached. The lamp can be extinguished by clicking on it.

4. Master caution lamp

Lights up in conditions that require attention such as low fuel and overheating. The lamp can be extinguished by clicking on it.

5. Icon toggle button

Press to toggle the icons.

6. Autopilot panel

7. Flight guidance system annunciator

8. Autopilot engagement annunciator

Indicates which AP (autopilot) computers are engaged or disengaged. The green steady lamp indicates that AP is engaged. Flashing amber indicates that AP has been disengaged. To turn off a flashing indicator, click on the lamp (note – AP2 is non-functional in this simulation).

9. Clock

10. Airspeed indicator

11. Attitude director indicator

12. Altimeter

13. Radar altimeter

14. Approach markers – OMI (Outer, Middle, Inner)

15. Standby attitude indicator

16. True airspeed and TAT (True Air Temperature) indicator

17. Engine instruments

18. RMI (Radio Magnetic Indicator)

19. HSI (Horizontal Situation Indicator)

20. Vertical speed indicator with TCAS

21. Standby altimeter

22. Standby airspeed indicator

23. Click area for co-pilot's panel

CO-PILOT'S PANEL

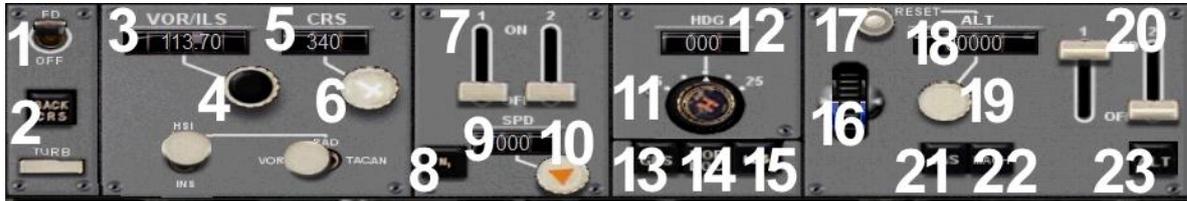


As well as many of the same instruments as the pilot's panel, the co-pilot's panel also contains the following instruments:

1. Click area for the pilot's panel
2. Thrust computer
3. Flap annunciator
4. Flight surfaces indicator
5. Landing gear indicator lamps

6. Landing gear handle

Autopilot



1. Turns flight director on and off
2. Selects back course approach to localizer
3. Nav Radio 1 frequency window
4. Nav Radio 1 tuning knob – clicking outside the white area sets whole numbers, and clicking inside the black area will set the decimal values. The Nav 1 frequencies can also be set on the radio on the panel and via the FMC.
5. VOR1 course selection window
6. VOR1 course selection knob
7. ATS (autothrottle selector) – must be on for AP IAS, Mach and N1 speed control.
8. Engine RPM N1 speed clamp – ATS must be engaged and speed will be held to the N1 value selected on the engine N1 instruments or selected via the thrust computer.
9. IAS/Mach speed selector window – will display either the desired IAS or Mach value depending upon which mode is selected.
10. IAS/Mach speed selector knob
11. Heading selector knob – the desired heading can be adjusted by clicking the outside edges of this knob. To engage the Heading Hold command, click the centre of the knob so it is pulled out (you can see that the knob is pulled out by an extended shadow appearing under the knob).
12. Heading Hold command window – displays the desired heading.
13. GPS hold select – engaging this button while the VOR/LOC command is engaged will command the AP to follow the GPS flight plan which is loaded via Microsoft's Flight Planner. (**Note:** this is a feature of MS Flight Simulator).

14. VOR/LOC Hold – selection of this button will engage navigation hold mode. If the GPS button is engaged the autopilot will hold the GPS flight plan route, otherwise the autopilot will track a VOR or localizer as indicated by the CDI (Course Deviation Indicator) on the HSI (Horizontal Situation Indicator).
15. ILS selection – this will engage the approach mode and will capture and fly an ILS approach if the proper frequency is tuned into Nav Radio 1.
16. Vertical speed adjustment wheel – this will adjust the vertical speed at which the aircraft will fly when Altitude Hold is engaged. The vertical speed is indicated by the double blue bug on the VS/TCAS indicator.
17. Altitude reset will set the aircraft's current altitude when the button is engaged.
18. Altitude selection window – displays the desired altitude
19. Altitude selection knob – adjusts the desired altitude
20. AP 1 command engages the autopilot and must be on for all the described features to work. The autopilot status is shown by the Autopilot Engagement Annunciator.
21. IAS command button – commands the ATS to hold at the Indicated Airspeed set in the IAS/Mach speed selector window. ATS must be engaged.
22. Mach command button – commands the ATS to hold at the Mach speed set in the IAS/Mach speed selector window. ATS must be engaged.
23. Altitude Hold button – commands the autopilot to hold at the altitude selected in the altitude selection window.

Flight Guidance System Annunciator



The Flight Guidance System Annunciator indicates which autopilot modes have been selected and engaged.

1. ATS lamp – the ATS lamp will display OFF (no indication), SPD or N1. SPD shows that the IAS or Mach commands are active. N1 indicates that the ATS is clamped to the N1 value.
2. ARM lamp – indicates which modes have been selected: OFF (no indication), HDG, VOR or APR.
3. ROLL lamp – indicates which modes have engaged and are controlling the ROLL function of the AP. This will read OFF (no indication), HDG, VOR, LOC or GS.
4. PITCH lamp – indicates which modes are engaged and controlling the pitch of the aircraft: OFF (no indication), ALT or GS.

Clock



1. Starts, stops and resets the timer
2. Selects Zulu Time or date
3. Resets and runs the minute timer
4. Selects either display of time or sim rate

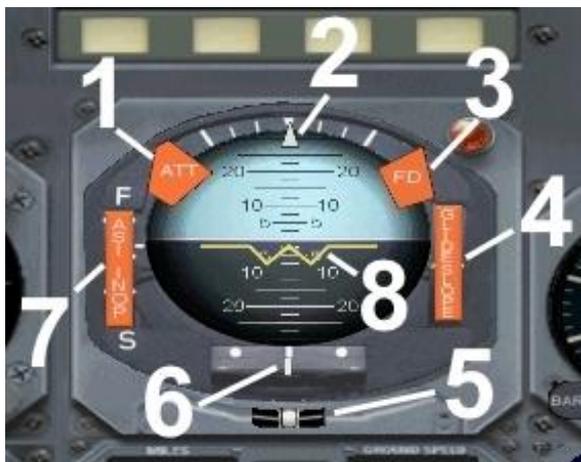
The two areas in the centre of the clock that are highlighted by white boxes are click spots for changing the simulation time or simulation rate.

Airspeed Indicator



1. Knobs located in each corner of the gauge are used to control the position of the speed reference bugs
2. Mach command indicator – displays when Mach hold is selected on the AP
3. Speed needle – shows the current Indicated airspeed
4. Speed bug – indicates selected speed in the autopilot's IAS/Mach speed selector window
5. Speed reference bug (x4)
6. Current IAS display window
7. Overspeed barber pole – this is the 'do not exceed' airspeed for the aircraft
8. Aircraft Mach speed window – displays the aircraft's current Mach number

Attitude Director Indicator



1. Flag displays when the ADI is inoperative
2. Bank angle indicator
3. This flag is displayed when the Flight Director is off or inoperative
4. This flag displays when there is no glideslope signal or the glideslope is inoperative
5. Turn and slip indicator ball
6. Localiser indicator – shows if the aircraft is to the left or right of the localiser
7. This flag displays when the speed reference bug is inoperative
8. Aircraft reference indicator



9. Flight Director pitch indicator
10. Flight Director roll indicator
11. Decision height warning light
12. Glideslope indicator – indicates if the aircraft is above or below the glideslope
13. Speed reference indicator - indicates if the aircraft's speed is above or below the ATS selected speed

Altimeter



1. Current altitude display window
2. Attitude hold bug
3. Kollsman setting in millibars
4. Kollsman setting in inches of mercury
5. Current altitude indicator needle
6. Kollsman setting knob

Radar altimeter



1. Radar altimeter indicator needle – indicated height AGL (Above Ground Level) from 1,500 feet and less
2. MDA (Minimum Decision Altitude) bug – this is set in the PROG page of the FMC

Engine instruments



1. The REVERSE UNLOCK caption illuminates to indicate the unlocking of the corresponding engine thrust reverser.
2. The REVERSE THRUST caption illuminates to indicate that reverse thrust is active on the corresponding engine.
3. N1 speed bugs, set for ATS N1 speed. This can be set using the knobs on the gauge or via the Thrust Computer.
4. N1 RPM needle
5. N1 RPM digital read-out
6. N1 speed setting knob
7. Exhaust Gas Temperature (EGT) digital read-out
8. Exhaust Gas Temperature (EGT) needle
9. N2 RPM digital read-out
10. N2 RPM needle
11. Fuel flow digital read-out
12. Fuel flow needle

Radio Magnetic Indicator



1. DME distance to VOR 1
2. DME distance to VOR 2
3. Flag indicates that signal from VOR is not present
4. Magnetic heading indicator for VOR 2 or ADF2 depending upon selection
5. Selector switch for either VOR 2 or ADF 2
6. Magnetic heading indicator for VOR 1 or ADF 1 depending on selection
7. Selector switch for either VOR 1 or ADF 1

Horizontal Situation Indicator



1. Heading bug – set via the AP or the heading bug knob on the HSI
2. Current heading read-out
3. 'To' inoperable flag, displayed when the VOR signal is lost
4. VOR/LOC flag – displayed when the signal is lost or the HSI is inoperable
5. Glideslope flag – displayed when GS signal is lost
6. Course set knob
7. 'From' inoperable flag – displayed when the VOR signal is lost
8. Heading bug knob



9. VOR1 DME digital read-out
10. Ground speed digital read-out
11. Glideslope indicator
12. 'From' indicator
13. CDI (Course Deviation Indicator)
14. 'To' indicator
15. Course indicator – can be set via the AP or the course set knob on the HSI

Vertical Speed Indicator with TCAS



Traffic is displayed on the Vertical Speed Indicator. The switch to turn on the TCAS is located on the transponder unit mounted in the pedestal. Traffic is indicated by different colour-coded images.

Light blue and white are not a threat and are displayed out to 30 miles. Yellow is TA (Traffic Advisory) and red is RA (Resolve Alert).

The +/- signs indicate if the traffic is above or below and the number value is feet x100. The arrow shows if the traffic is descending or climbing.

Thrust computer



Only the TO and GA features operate in this unit.

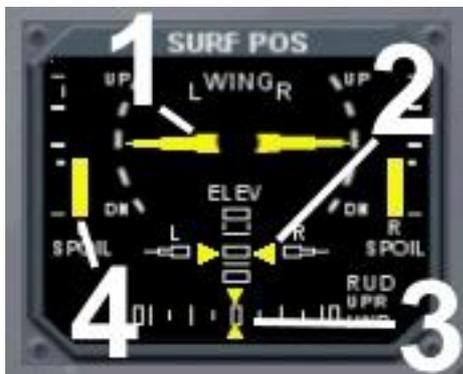
1. N1 limit value the ATS will clamp to when N1 is selected on the AP. The value can be set by pressing the thrust select buttons on the Thrust Computer or via the N1 set knobs on the engine's RPM N1 gauges.
2. Total Air Temperature
3. Thrust select buttons – take-off, take-off flex, go around, max. continuous thrust, climb and max. climb thrust

Flap annunciator



1. Flap position pointers
2. Flaps inoperative flag
3. Flaps power off flag
4. Flap limiting speeds

Flight surfaces indicator



1. Aileron position indicator
2. Elevator position indicator
3. Rudder position indicator
4. Spoiler position indicator

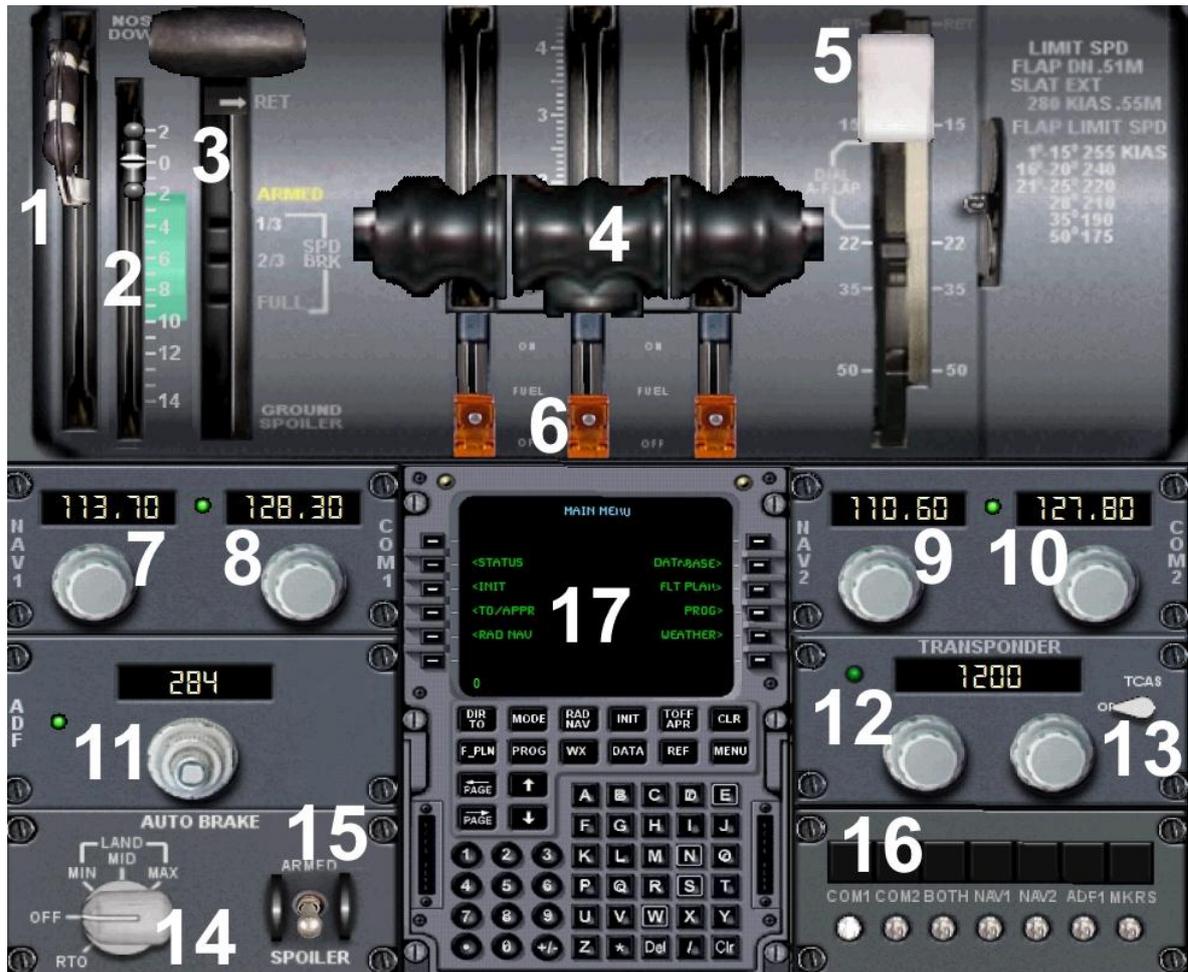
OVERHEAD PANEL



1. Yaw damper switches
2. Yaw damper circuit test
3. GPWS (Ground Proximity Warning System) switch and indicator lamp
4. Fuel vents for engines 1-3 (non-operational)
5. Window de-ice switches
6. Avionics bus switches
7. Probe and port amp meter
8. Probe and port selection switch (turns on pitot heat)
9. Brake anti-skid switch
10. Emergency power switch (air-driven generator)
11. Emergency lights switch (non-operational)
12. No Smoking sign switch
13. Seatbelts sign switch
14. Engine start override (non-operational)
15. Engine ignition switch
16. Engine start switches
17. Beacon lights switch – select ‘both’ to turn on beacon lights

18. Beacon lights mode switch (non-operational)
19. Engine de-ice switches
20. Panel lights switch – turns on instrument back lighting
21. Floodlights switch – turns on overhead cockpit lights
22. Landing lights switches
23. Taxi lights switch
24. Runway turn-off lights switches
25. Thunderstorm lights switch (non-operational)
26. Dome lights switch (non-operational)
27. Navigation lights switch
28. Strobe lights switch
29. Formation lights switch (non-operational)
30. Magnetic (whiskey) compass backlight switch
31. Wing light switch
32. Logo light switch
33. Alert annunciators
34. Alert annunciators test switch
35. Close overhead icon

PEDESTAL



1. Elevator trim handle
2. Elevator trim pointer
3. Spoiler handle
4. Throttles
5. Flaps handle
6. Fuel cut-off switches
7. NAV 1 radio
8. COM 1 radio
9. NAV 2 radio

10. COM 2 radio
11. ADF radio
12. Transponder
13. TCAS switch – turns TCAS on/off
14. Autobrake switch
15. Auto spoiler arming switch
16. Audio control panel
17. Click spot to enlarge FMC

FLIGHT ENGINEER'S PANEL



On the panel you will see small magnifying glass icons. Clicking these will expand the boxed-in areas for a better view.

1. Open upper electrical panel
2. Open upper pressurisation/air panel
3. Open upper miscellaneous panel
4. Open lower electrical panel
5. Open lower pressurisation/air panel
6. Open lower miscellaneous panel
7. Close flight engineer's panel
8. Open hydraulic panel
9. Open fuel panel

Most of the systems in the flight engineer's panel are non-functional and so although switches will click, lights will illuminate and needles will move, they will not have any effect on the way the aircraft behaves or flies.

UPPER ELECTRICAL PANEL



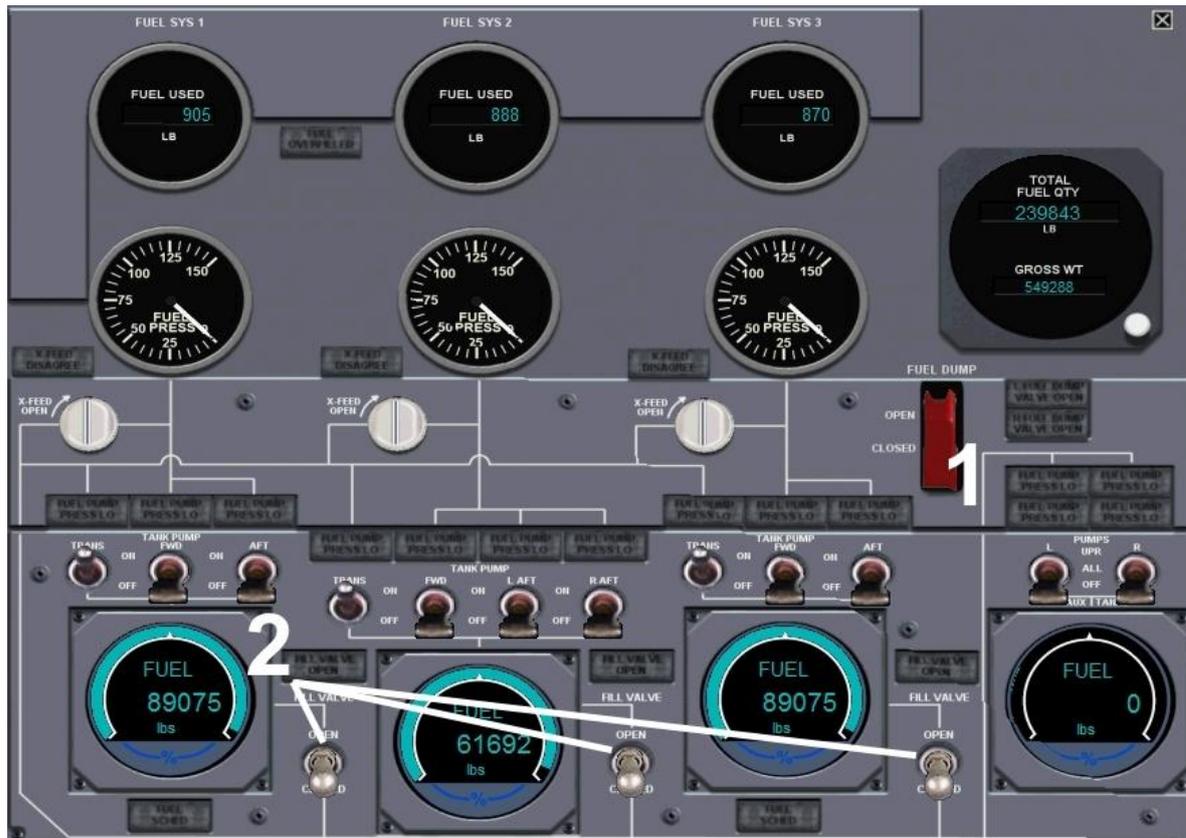
1. Instrument back lighting switch
2. APU generator switch. With the APU running at 80% or more, turn on the APU generator for AC/DC power from APU.
3. APU Master – Start, Run and Off. Place the switch into the Start position until N1 reaches 80%, then place it in the Run position.
4. Master battery switch

LOWER ELECTRICAL PANEL



1. External power switch. With the aircraft parked and the parking brake set, this will supply electrical power to the aircraft.
2. Engine-driven generator disconnects. Once these are disconnected in flight they cannot be reconnected until the aircraft is parked and all the engines are shut down.

FUEL PANEL



1. Fuel dump switch
2. Fill valve switches. When the aircraft is parked in a designated parking space and the brakes are set, turning these on will call the fuel truck.

FLIGHT MANAGEMENT COMPUTER

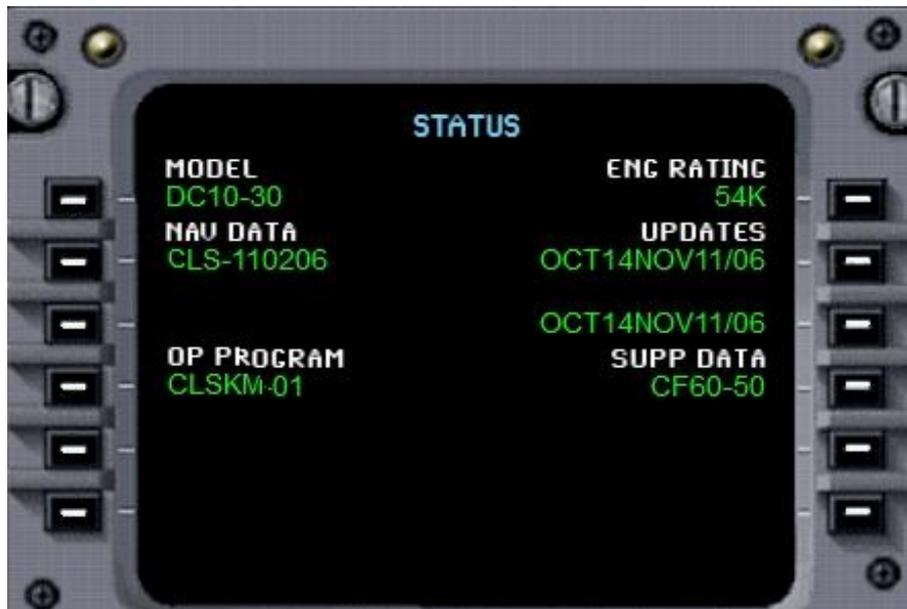


The FMC (Flight Management Computer) in this F-Lite aircraft utilises the internal flight planner in Flight Simulator and so there is no lengthy procedure needed to input a flight plan into the FMC.

Once you have established a flight plan in FSX it can be displayed in the FMC and you can follow the route and view data on the waypoints along the way. There is also a 'Direct To' feature which will allow you to jump over one or more waypoints if you wish to.

There are basically two ways to select the different pages in the FMC. One is by using the line select keys (LSKs) which are to the left and right of the display screen on the Main Menu. You can always go to the Main Menu by selecting the 'Menu' button on the far right on the second row of buttons under the display screen.

For example, to view the Status page, you can press the line select key 2L (second on the left of the screen) and the following screen will be displayed.



To return to the Main Menu, press the 'Menu' button on the second row below the screen.

The other method of selecting different pages is by using the two rows of buttons under the display screen. Let's say that you want to display the page to set the radios. Simply press the 'RAD/NAV' button and the page will be displayed.

When inputting data into the FMC that has decimal places (like radio frequencies), make sure you input both decimals. To change the Com 1 frequency to 121.80, for example, enter the digits with the numerical keypad, making sure you enter the eight and the following zero. It should look like this on the screen:



To input the value into Com 1 press the line select key 2L.



To use the 'Direct To' feature, select the 'DIR TO' button on the first row under the display screen.

For example, to fly direct to LMN, skipping the waypoints BDF, BURKK, ALBRT and JAVAS, first press the line select key 6L; this loads the waypoint LMN into the buffer at the upper left.



Now press the line select key 1L to finish the command. Your flight plan will now fly directly to LMN, skipping over the other waypoints. This is done using the GPS feature on the autopilot.



Another feature in the FMC is its ability to calculate and display the V-speeds and approach speeds for the aircraft at its current weight. Press the 'TOFF/APR' button and you will see this page:



Pressing the line select key 1L will calculate your V-speeds using your current weight and air density:



Pressing LSK 6R will take you to the approach speed page where you can also calculate those speeds.



The flight plan (F_PLN) page displays the details of the waypoints contained in the active flight plan. The waypoint identifier is shown on the left and two columns of data are shown on the right, estimated time to reach the waypoint and track to the waypoint, or distance to the waypoint and the frequency of the waypoint (if applicable).

You can cycle through this data using the left and right PAGE keys. An arrow will appear at the top of the page if the flight plan consists of more than six waypoints, indicating that there are several pages which can be scrolled through by pressing the up and down arrow keys.



You can press the LSK to the left of the waypoint to see additional data on that waypoint. For example, if we want to see the data for PUB, we would press LSK 4L.



To return to the previous flight plan page, press LSK 6R.

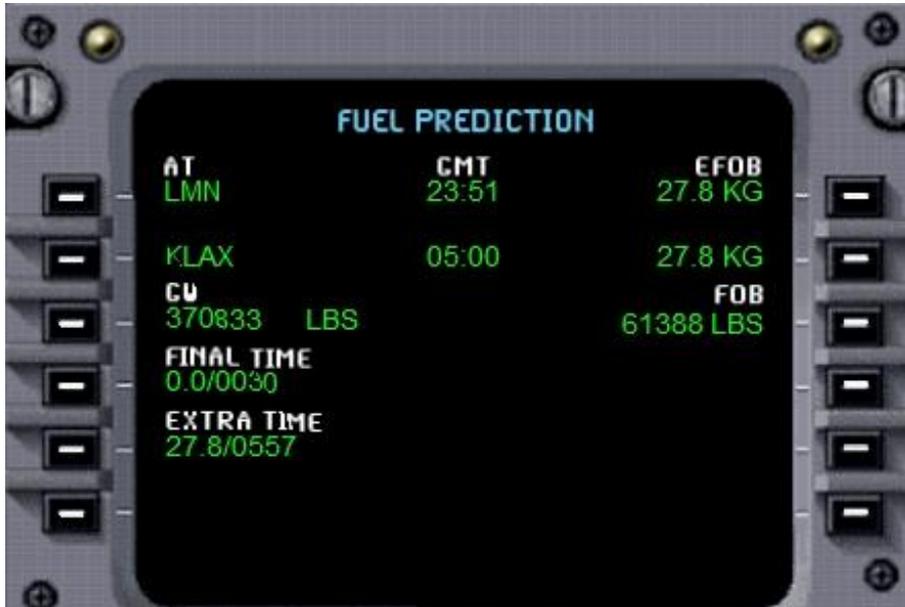
The program (PROG) page allows you to input additional data for use by the FMC.

Here you can input your reference speeds and altitudes along with MDA (Minimum Decision Altitude), which will set the bug on your radar altimeter.



Pressing LSK 6R will take you to the fuel prediction page.

This page will show you the estimated fuel on board at the next waypoint and your destination. You can change the display values for the GW to lb (pounds) or kg (kilograms) by pressing the 'P' key for pounds or the 'K' key for kilograms. You can set the FOB for pounds, kilograms, litres or gallons by pressing 'P', 'K', 'L' or 'G'.



There are other pages such as 'Init' which give you info such as the carrier and flight number. In 'Data' you will find wind speeds and vectors, current temperatures and so on.

FLYING THE DC-10

Penang to Singapore – a tropical tutorial

For many years the three-engine DC-10 was a long haul stalwart for many of the world's airlines. It also had another role to play, however, and that will be the focus of this tutorial. The DC-10 was often employed on high density shuttle routes that required a wide-body aircraft to support the sheer volume of passengers using these busy short haul services. It proved to be an ideal aircraft in this role and was pressed into service worldwide, being highly profitable for the airlines and popular with passengers.

We'll be taking the DC-10 island hopping in the tropics from Penang, following the coast of Malaysia to our final destination of Singapore with a flight time of a little over 55 minutes. The DC-10 was no stranger to Penang and for many years was a mainstay of the shuttle services between Penang and Kuala Lumpur and Penang to Singapore.

Penang is known as the Pearl of the Orient, thanks to its idyllic beaches, mountains and a relaxed lifestyle. Malaysia's Indian and Chinese influences form the cultural backdrop to the country but in Penang the Chinese hold sway and this is reflected in the culture with a plethora of Buddhist temples and pagodas. It is little wonder that this is one of the world's premier tourist destinations. Yet, mere minutes after take-off, as we traverse the Malay mainland, tourism plays second fiddle to nature. We'll fly over some of the densest rainforest in the world before descending to the island state of Singapore with its gleaming tower blocks and pristine streets and gardens. This will be a flight of contrasts, offering some of the finest views flight simulation has to offer.

Here are the details for today's flight:

WMKP – VIH (117.30) – ANSOM – LATUK – DAMAL – VJR (112.70) – JB (400.0) – WSSS

Estimated time en-route: One hour

Route distance: 328 nautical miles

Departure time: 1200 (local time)

Weather: Clear

Now that we are prepared for the flight we can proceed to the cockpit to begin our pre-flight checks. To load up the DC-10 tutorial flight, follow these steps:

1. Start FSX:SE
2. If you are using FSX, select the **Free Flight** menu
3. Choose **Load**
4. Select **DC-10 HD tutorial flight** from the list of saved flights
5. Click on **Fly Now!** (FSX)

You should now find yourself sitting in the cockpit of a DC-10-40 located at Penang International, gate 13. The cockpit is currently in a 'cold and dark' state, i.e. all the cockpit systems are switched off, as you would find the aircraft prior to the first flight of the day. This means we will need to spend some additional time setting up the cockpit, but doing so will allow you to learn a considerable amount about the features and functions on board this aircraft.

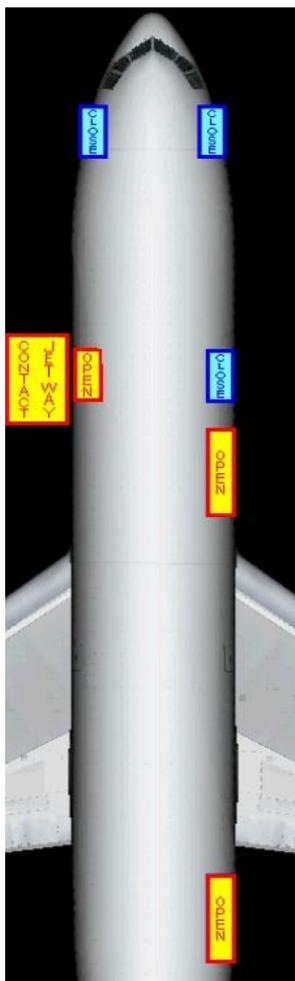
This tutorial will cover the necessary steps for you to get from point A to B, but it will not explore each system in depth. Please refer to the panel guides for details of each panel.

In the real world our DC-10 would have three flight crew but, thanks to the magic of Flight Simulator, we have been able to ease the workload of the budding DC-10 pilot. With our F-Lite range the focus is on flying and the enjoyment is in being airborne – not wading through pages of manuals and technical notes. The role of the flight engineer is handled automatically by the software during flight and we have also simplified the tasks facing the pilot. This is most evident in the modelling of the flight management computer. Many DC-10s were retro-fitted with this remarkable device as an aid to navigation and systems management. For this flight and future flights, however, we will not be asking you to laboriously enter data and wade through pages of electronic screens. Any flight created within the Flight Simulator flight planner will automatically be transferred to the flight management computer and will be immediately ready to fly.

Getting started

The first thing we need to do is get the aircraft ready for passenger boarding and cargo loading. Open the doors panel and click on the CONTACT JETWAY icon to request the jetway.

Once the jetway has docked with the aircraft, click on the main passenger door icon and both cargo door icons.



Switch to the external (Spot) view and you should see the jetway and baggage handlers in place. The cabin crew and ground handlers can now begin their preparations for passenger boarding and the loading of cargo while we continue setting up the aircraft ready for the flight ahead.



We now have our flight plan automatically entered for us into the FMC, but before we take a look at it we should establish aircraft power. Move over to the engineer's panel but don't worry about the number of gauges, switches and dials; for this tutorial we won't have to delve too deeply into their workings! As your confidence increases you may wish to explore this panel in detail, using the notes elsewhere in this manual, but for this flight it is simply not necessary. We shall turn our attention to the upper electrical panel. This panel is on the top left of the engineer's station.



If you are using the 2D panel, a small icon to the top right of the electrical panel allows it to be zoomed for easier viewing.

When there are specific tasks you need to perform as part of our checklist procedures they will be highlighted as **bold** text. These are specific items you need to follow. The first of these is starting the APU.



BATTERY – ON

The battery is required to start the APU and can be found as a toggle switch towards the lower centre right of the panel.



**APU FUEL PUMP – ON
APU MASTER – START, RUN**

Using the mouse to click the APU switch into the start position will start the APU running. The APU, which is a small jet engine at the rear of the aircraft, will now spool up and provide us with electrical power and pneumatic air on the ground.

Once the APU N1 RPM gauge has stabilised at 100% move the APU master switch to the RUN position.



Now that the APU is running we can connect the APU to the electrical bus.

**APU GEN – ON
APU GEN BUS 1 – ON
APU GEN BUS 2 – ON
APU GEN BUS 3 – ON**

These switches can be found towards the upper left of the engineer's panel, with the three generator switches in a row adjacent to the APU generator switch. Once engaged, the associated indicator lights should glow in a rather tasteful green!



We can also go ahead and prepare the engine generators ahead of engine start by selecting the three DC tie switches at the bottom of the panel to the open position.

**DC TIE 1 – OPEN
DC X TIE – OPEN
DC TIE 3 – OPEN**

We can also open the AC bus ties in preparation for engine start. The three switches are directly beneath the three DC switches.

AC BUS TIE 1 – OPEN

AC BUS TIE 2 – OPEN

AC BUS TIE 3 – OPEN



Finally, switch on the galley power using the three switches located at the top of the upper electrical panel.

Move across to the fuel panel on the lower right side of the engineer's panel and switch on all of the tank pumps.

LEFT TANK FWD PUMP – ON

LEFT TANK AFT PUMP – ON

CENTRE TANK FWD PUMP – ON

CENTRE TANK AFT PUMP – ON

RIGHT TANK FWD PUMP – ON

RIGHT TANK AFT PUMP – ON



Now move up to the overhead panel and switch on the avionics bus switches.



AVIONICS BUS – ON



Finally, set both the No Smoking and Seatbelts signs on.

**NO SMOKE – ON
SEATBELTS – ON**



We can now return to the main panel and confirm that our flight plan is indeed in the flight management computer (FMC).

Open the FMC using the icon labelled 'FMC'. You will be presented with the main menu of the unit.

Ignoring all the other functions for the moment, you should see on the right of the unit an option to view the flight plan labelled as 'FLT PLAN>'. Using the mouse, press the button on the FMC immediately to the right of this prompt and the flight plan display should be opened. Our flight plan to Singapore will have been automatically entered here when we created it earlier.

There is more than one page of waypoints, which can be scrolled using the UP and DOWN arrow buttons on the FMC keypad. Scrolling up and down will allow you to view the entire flight route.

Safe in the knowledge that our flight plan has been entered into the FMC, we can go ahead and request IFR clearance from ATC, using the in-built ATC function of the simulation. For many flights the in-built ATC can be a hit and miss affair, but fortunately for us it proves to be an asset for this flight, with the ATC controllers giving us both departure vectors to join our route and vectors to line us up with our arrival runway at Singapore and generally leaving us alone for the rest of the flight.

In a single stroke this will save us the hassle of calculating an approach route or referring to STAR (Standard Terminal Arrival) charts to navigate us safely to Singapore. This tutorial is focused on flying the aircraft, rather than chart reading and navigation, but as you gain experience with the aircraft feel free to fly by the charts for your flights.

The ATC controller will give us our initial heading (following the runway track), an initial altitude clearance and our transponder squawk code. Acknowledging this will automatically tune our radios and set the transponder code as per the request.

If you wish to tune the radios yourself, however, open the pedestal panel using the icon and do so. The primary communication radio COM1 and the transponder panel are both tuned from here by simply clicking the associated rotary knobs.

COMMUNICATION RADIO – SET TRANSPONDER – SET



Configuring the autopilot



You will have been given an initial climb altitude, and we can enter this directly into the autopilot deck of the aircraft as we shall be flying using the auto-flight functions. The altitude window is the rightmost window on the autopilot panel, marked as ALT, at the top right of the glareshield. Dial in the altitude requested by ATC using the mouse over the rotary knob immediately below the window.

Immediately to the left of this window is a vertical thumbwheel. This controls our desired vertical speed.



The actual vertical speed set is seen as a blue marker on the vertical speed indicator / TCAS panel on the centre left of the primary 2D panel under the primary altitude gauge. Adjust the thumbwheel until a vertical speed of 2,000 feet per minute is indicated on the VSI with the blue marker.

While we are configuring the autopilot we can return to the FMC to calculate our take-off reference speeds.



Open the FMC and press the button marked TOFF/APR (Take-off/Approach). At the top left of this page is an option to automatically calculate our take-off speeds, saving us a lot of time and effort! Press the button to the left of this prompt, and our take-off speeds will automatically be shown on this page as V1, Vr, and V2

For the uninitiated, a simple explanation of V1 is the speed at which we are committed to the take-off roll. Beyond V1, except in the direst emergency, we should take the aircraft into the air to deal with all problems as there is simply insufficient runway left to stop safely. There are very few major emergencies that would warrant an attempt to apply the brakes after V1, and even the loss of an engine would still be dealt with whilst airborne.



Vr is our rotation speed, the speed at which we pull back on the yoke (or joystick) to become airborne, and V2 is our safe initial climb speed.

What interests us at this juncture is V2, as we will enter this as a target speed into the autothrottle system. The speed window is the first window on the glareshield. Add 10kt to your V2 speed and enter this total into that window (for example if your calculated V2 is 144, then post 154 in this window). Pilots add 10kt as an additional 'comfort zone' during take-off. That only leaves the heading window to be prepared ahead of flight and this will be done as we take the runway for departure, aligning our chosen heading with the runway centreline heading.

AUTOPILOT ALTITUDE – SET AND CHECKED
VERTICAL SPEED – ARMED 2,000 FPM
AUTOTHROTTLE SPEED – SET AND CHECKED

We can also calibrate our altimeters to the current outside air pressure. The easiest way to do this is to simply press the [B] key within the simulation.

ALTIMETERS – SET AND CHECKED

Starting the engines

We can now breathe a sigh of relief in the knowledge that we are ready for engine start and take a short break before pushback.

When you are ready, give ATC a call and ask them for taxi permission to the active runway. Once this is received, we can use this as the cue for engine start and pushback, but first we need to close the doors and detach the jetway. Use the icons on the door panel to close the passenger and cargo doors, and then click on the CONTACT JETWAY icon to retract the jetway.

If you have no interest in engine start sequences you can automate the whole process by pressing **[Ctrl] + [E]** on your keyboard and skip the manual start procedure.

Now we have taxi permission we can start the engines. Each airline has its own procedure for this, but for this tutorial we will work right to left, with engines 3-1 in that order. Engine number 2 is the high engine above the fuselage.

Pushback using **[Shift] + [P]** and align yourself with the direction you need to taxi to either runway 22 or runway 4, depending on the instructions given by ATC. Once satisfied that you are in a position to start taxi, engage the parking brake and we will start the engines. For your first flight it is easier to pushback first and start the engines later. As you become more proficient with the DC-10 you may want to start the engines during the pushback itself.

On the overhead panel, switch on the beacon lights to warn the ground crews of our intent to start.

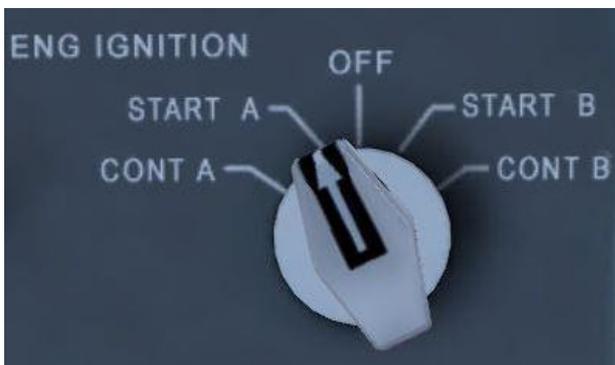
BEACON – ON





Open the pedestal panel and locate the small orange fuel cut-off switches below the thrust lever for each engine. Before we start the engines we need to ensure that these cut-off switches are set to OFF (the down position towards the bottom of the screen). Do this now with a simple mouse-click on each.

FUEL CUT-OFF SWITCHES – OFF



We can now start each engine in turn, starting with number 3.

Returning to the overhead panel, rotate the engine ignition switch to the START A position. We will use igniter A to start the engines. Our DC-10 has two separate starter circuits that can be cycled for engine start.

STARTER A – ON



Below the ignition switch are three engine start switches. We can now start engine number 3 by pressing the third engine start button.

ENGINE NO. 3 – START



You will see immediate movement on the engine gauges on the panel. After two or three seconds supply fuel to engine number 3 for a full light-up by moving the fuel cut-off switch for the third engine (located on the pedestal) to RUN.

NO. 3 FUEL CUT-OFF – RUN

Repeat the process for the remaining two engines, using the respective switches, and then rotate the engine ignition switch back to the OFF position.

We are almost ready to depart, but we just need to do a little housekeeping with the systems before taxi.



Open the engineer's panel and connect the engine generators to the electrical system. They can be found at the very bottom left of the engineer's panel.

GEN 1 – ON
GEN 2 – ON
GEN 3 – ON



We have now finished with the APU so we can close it down.

APU – OFF

The air conditioning packs can now be switched on, as these will provide both air conditioning and pressurisation for the aircraft during our flight. The three pack switches can be found in the centre of the engineer's panel.

PACKS – ON



Also switch on the cockpit voice recorder and flight data recorder, both of which can be found to the top right of the panel.

CVR – ON
FDR – ON



We can now also engage the avionics airflow, which provides cooling to the avionics equipment. This little switch can be found at the top right of the centre area of the panel, just to the right of the AFT CARGO TEMP rotary switch.

AVIONICS COOLING – ON

Open the hydraulics panel and switch all the pumps to ON. The hydraulics panel can be opened by clicking the small icon in the lower right corner of the engineer's panel.

HYDRAULIC PUMPS – ENGINES 1, 2, 3 – AUTO



If all this switching is getting a little too involved, remember that you can take it at your own pace, or not at all. Starting the engines with [Ctrl]+[E] means that you don't even have to open the engineer's panel and we can assume the flight engineer is taking care of all this for us!



We can now return to the overhead panel to finalise our lights and instrument heating. Welcome back to those of you who skipped forward through the engine start procedure! We will also engage the yaw dampers; this stops the aircraft from 'dutch rolling', which is a particularly nauseating yawing motion that would more than do justice to any fairground ride you care to mention.

YAW DAMPERS – ON

Now switch on the taxi (nose) and navigation lights.

**NAV LIGHTS – ON
TAXI LIGHTS – ON**



We keep the window heat on, to both avoid ice accretion and, interestingly, to keep the windows supple and more able to absorb the damage of a bird strike during the take-off phase.

WINDOW DE-ICE – ON



Out here on a beautiful clear day in the tropics, we have no need for either wing or engine anti-icing during the take-off but we will engage the pitot heat now to protect the pitot sensor.

PITOT HEAT – ON

This can be found at the top right of the overhead panel and engaged by setting the rotary dial to the CAPT position.



Open the pedestal and set the elevator trim to four units up.

ELEVATOR TRIM – SET

Taxi

We are now ready to taxi to hold short of the runway given to us by ATC. Release the parking brakes and advance the thrust levers slowly to achieve breakaway thrust. The idea here is to advance the power slowly for a smooth taxi, rather than imitating a bucking bronco at a rodeo. We are quite lightly loaded with fuel, so the aircraft will be much more responsive than it would be at heavier weights.



As you begin the taxi, touch the brakes lightly a couple of times to ensure that you have ample braking pressure. It can be somewhat embarrassing to discover that it is not possible to stop the aircraft so now is the time to find out! As we have not modelled failures in this simulation of the DC-10 all should be well, but it is good practice nevertheless. Just as soon as you are rolling smoothly we can deploy the flaps. We can use flaps 15 for this take-off.

FLAPS – 15 DEGREES SET

Taxi to the runway and hold short. Contact ATC and request our take-off clearance, and we should be able to get underway. We can now turn on our TCAS system as we make the turn onto the runway. Because we have chosen not to have any AI traffic for this flight it is not strictly necessary, but good practice regardless.



The TCAS system will alert us of any potential conflict with other aircraft and since its introduction has saved countless lives. The switch can be found on the pedestal panel, adjacent to the TCAS panel itself.

TCAS – ON

On the overhead panel, switch on the landing and strobe lights.



Take-off



As you take the centreline of the runway, come to a stop and hold the aircraft steady with the brakes. We can now align the autopilot heading window with our current runway heading, so dial in the heading of the centreline now, as ATC has asked us to maintain runway heading after departure.

AUTOPILOT HEADING – SET TO RUNWAY HEADING



Arm the autothrottle and flight director switches.

AUTOTHROTTLE – ARMED FLIGHT DIRECTOR – ON

Both of these switches can be found on the glareshield, to the left of the autopilot windows. The autothrottle switch is to the right of the VOR/ILS receiver, and the flight director is to the immediate left.

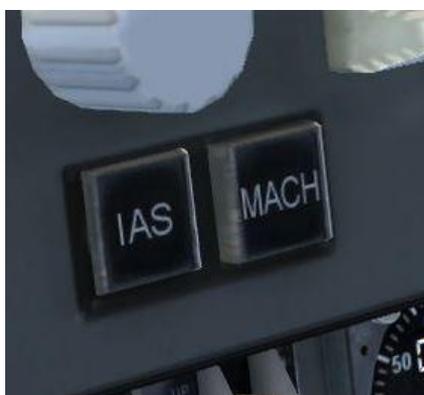
We can now advance the power for take-off. Carefully monitoring the power, advance the thrust levers to 70% N1 as indicated by the upper row of engine gauges. Once these are stabilised, release the brakes and apply full power as the aircraft accelerates.

Remember those V-speeds we discussed earlier? As we pass V1 take a firm hold of the yoke (or joystick) and wait for rotation. At Vr, rotate gently but firmly by pulling back on the yoke and the aircraft should take to the air. Try not to be too aggressive so as to avoid a tail strike. Raising the nose of the aircraft by about three degrees per second will work out just fine.



As we achieve a positive climb, raise the gear and also engage the autothrottle into speed tracking mode.

GEAR – UP



AUTOTHROTTLE – SPEED MODE

To latch the autothrottle into this mode, press the **IAS** button immediately below the altitude window of the autopilot deck. This will activate the mode in which the autothrottle maintains the required indicated airspeed, as the initials suggest. In this case we have selected V2+10 ahead of departure and the autothrottle will attempt to hold this speed for us.

Climb

Try and hold the nose at around 15 degrees of pitch until 1,000ft above the runway. At that point lower the nose slightly and dial our next target speed into the speed window, which will be 210kt. As the aircraft accelerates towards this speed we can retract the flaps a notch.

As 210kt is achieved we can now work towards retracting the flaps fully. Dial in 230kt as our target speed and retract the flaps.

FLAPS – UP



We can also now engage the autopilot climb mode and heading modes.

Switch on the autopilot using the **CMD** (command) master switch, to the right of the glareshield. Press the **ALT** button so the aircraft will climb to our chosen altitude with our pre-selected vertical speed of 2,000 feet per minute.

We can also have the autopilot follow runway heading for us. Click on the centre of the heading select knob on the autopilot deck. You should see it extend outwards. You can now release the yoke as the aircraft is flying both the climb and heading for us and we are fully on the automatics. By this time ATC will be calling us with a heading to follow towards our chosen course.

Respond to the request and simply dial the heading provided into the autopilot deck, and the aircraft will turn appropriately to follow this heading. Ensure that the heading knob has not inadvertently been pushed in and remains extended.

We can check that we are in the proper modes of the autopilot using the FMA (Flight Mode Annunciator) which is a series of advisory lamps that alert us to the current state of the autopilot. The FMA can be found immediately above the captain's artificial horizon and attitude indicator. All being well, SPD, HDG and ALT should be highlighted in green. If not, repeat the procedure just described.

FMA INDICATIONS – CONFIRM



We are now flying fully on the automatics. From now on our workload lessens considerably so we can afford a quick glance outside the aircraft. On our left side we have a panoramic view of northern Malaysia and the opportunity to look across into Thailand, with the border being very close to our current position. If you go into Spot view briefly, behind the aircraft you will also see the whole island of Penang, its capital, Georgetown, and the long road bridge linking this beautiful island to the mainland at Butterworth.

The eagle-eyed may be wondering why we have chosen 230kt as our initial speed rather than the expected 250kt below 10,000ft of altitude. The answer is that we want to avoid sliding in our turns and this speed offers a good compromise of turn performance whilst still offering us a clean speed.

Shortly we can expect ATC to give us a final heading that will allow us to “proceed on course”. Once we have made this turn, knowing that we have no further significant twists in the route ahead, we can accelerate to 250kt in our climb. Dial this in the speed window and the aircraft should accelerate.



When we receive the “Resume own navigation” cue from ATC we can also transfer into an autopilot mode that allows us to track the flight plan in the FMC, in a manner identical to GPS NAV mode in a light aircraft. Press the GPS and then the VOR/LOC buttons in sequence. These buttons can be found under the heading window of the autopilot.

Confirm that the FMA shows both centre lights highlighted as NAV. We are now following the FMC flight plan.



As we progress through 10,000ft increase the speed in the speed window to 300kt, this will be our climb speed until we reach cruise. On the overhead panel, switch off the landing lights.

Expect also further altitude clearances from ATC. Acknowledge them and dial the new altitude provided into the altitude window. Using the thumbwheel, reset the rate of climb to 2,000fpm and press the ALT button again to begin the next climb segment.

Once you pass 25,000ft, wind the rate of climb down with the thumbwheel to around 1,200fpm. A 2,000fpm rate of climb is unachievable at higher altitudes in the less dense air and we shall be using 1,200fpm as our climb rate for each clearance we receive until levelling off at our cruise height of 31,000ft.

Cruise

Once in the cruise we can switch from IAS to Mach hold, as we fly by Mach at high altitudes rather than by indicated airspeed. Press the MACH button on the glareshield and use the speed select knob to set **0.78** (i.e. 78% of the speed of sound).



We are now well established over the mainland of Malaysia with the tea plantations of the Cameron Highlands below us as we pass over the small town of Ipoh on our right side. We are actually following closely the route of the original Orient Express, which plied its trade between Bangkok and Singapore. The rail line enters Malaysia at Butterworth and we will be following it, with only minor deviations, all the way to Singapore.



During the course of the cruise we should expect minimal contact with ATC, with perhaps only a handover to Kuala Lumpur centre.

With the autopilot and autothrottle maintaining our course and airspeed, take the opportunity to look at some of the other systems that are explained in this manual.

Descent

As we reach our top of descent, just shortly after passing abeam of Kuala Lumpur city, ATC will issue us instructions to descend. This is extremely helpful and avoids us having to calculate our descent path by hand. If we did not have ATC's guidance, a good rule of thumb is to allow three miles for every 1,000ft we need to descend.



We will be descending in steps, following the guidance given to us by the controller. As each altitude is given, dial it into the altitude window, select a vertical speed of -2,000fpm, and press the ALT button to begin the descent. The procedure is exactly the same as the steps during climb, with the one exception of setting a descent of -2,000fpm using the thumbwheel rather than a positive climb.



As you start your descent, return to the autothrottle IAS mode by pressing the **IAS** button on the glareshield, to maintain a 300kt descent.



As we start our descent we can tune the ILS for our arrival runway. We will be landing on runway 2L, to the north, flying a wide sweeping arc over the island on our final approach. So let's go ahead and set up the radio frequency for the ILS. Using the NAV1 receiver at the top of the glareshield, enter the frequency of 110.9 and a course of 023, which is our inbound course to the runway.

With no active weather, the ATC controller usually offers runway 2L as our arrival runway and advises us of this as we are further established in the descent. There is no cause for concern if another runway is offered to us – simply choose the ATC menu option to select another approach and request the ILS for runway 2L. These chaps at Singapore are always very obliging!

For this flight the ATC controller will guide us all the way around the island, offering us some stunning views along the way, and will line us up with the final approach. It makes things considerably simpler than attempting this vectoring manually.

The ATC controller will shortly start to offer headings to follow. Simply dial these into the heading window and click the heading rotary knob to reselect the autopilot's heading mode. Our DC-10 will turn to follow each heading as it is given to us by ATC. Remember to double-check that you have selected heading mode by confirming that HDG is highlighted green on the FMA.



As we approach 10,000ft in the descent we can start to slow the aircraft to the required 250kt; dial the speed down in the speed window. We will need to adjust the rate of descent to allow the aircraft to decelerate, so wind it back to -1,300fpm.



Switch on the landing lights as you pass through 10,000ft.

Approach and landing

As we approach 6,000ft we can slow down further and start to deploy flaps. This is actually deploying flaps somewhat earlier than would normally happen, but for the purposes of this tutorial it will allow us additional breathing space to configure the aircraft for landing.



As you become more proficient with the DC-10 and its handling you will be able to decelerate and follow the flaps schedule much closer to the arrival airport. As doing so can be quite hectic, however, this early deployment will hopefully avoid an unwanted sense of urgency interrupting the learning experience. Wind the speed back to 230kt and, as 230kt is achieved, deploy the first stage of flaps. This can be confirmed by a quick glance at the flaps indicator on the pedestal.

You will have just passed the coastal town of Malacca on your right, and indeed the stretch of ocean we are about to overfly into Singapore is named the Straits of Malacca, reminding us of the seafaring and trading heritage of this colonial town.

Passing over the border town of Johor Bahru we will start to receive vectors from ATC that will take us around the island in an arc in preparation for our northerly landing. As we achieve our final vector to intercept the ILS for the runway, we will be informed of this by ATC and told to maintain this heading and altitude until established on the localiser. At this point slow the aircraft to 180kt and deploy 15 degrees of flaps.

We now need to arm the autopilot to track us on the localiser and glideslope of the ILS. Press the **GPS** button on the glareshield to return the aircraft to navigation mode and immediately press the **ILS** button. This will arm the ILS approach mode of the autopilot.

ILS APPROACH MODE – ARMED





As we cross the centreline of the runway the aircraft will automatically capture the localiser and turn us inbound on our final approach. We can now arm the autobrakes and spoilers for landing. Both switches can be found on the lower left of the pedestal panel.

**SPOILERS – ARMED
AUTOBRAKES – MEDIUM**



As the glideslope indicator starts to move down on the HSI, slow the aircraft to 160kt and deploy 22 degrees of flaps. As the glideslope centres and is captured by the autopilot, lower the gear, deploy full flaps and slow the speed by winding the speed window to our landing speed of 145kt.

**GEAR – DOWN
FLAPS – FULL FOR LANDING**



The HSI should now show us tracking both the localiser and the glideslope, and a view from the window will show the runway dead ahead. We are in good shape for landing!



We can allow the autopilot to take us all the way down to 200ft above the runway. As you reach 240ft on the altimeter (the airport is 40ft above sea level), disconnect the autopilot and autothrottle.

AUTOPILOT – DISCONNECTED
AUTOTHROTTLE – DISCONNECTED



The aircraft will continue to drift towards the runway, with only the need for slight adjustment, if any, to the yoke. At 50ft above the runway bring the power back to idle and lift the nose slightly to three degrees above the horizon on the HSI. This is our landing flare.

Shortly thereafter the aircraft should make a smooth touchdown on the centreline. The brakes and spoilers that were armed previously will now deploy automatically. Apply reverse thrust using the [F2] key until the speed reduces to 60kt and then release back to idle with the [F1] key. You can now take over manual braking with a light touch on the brakes and decelerate to 10kt as you turn off the runway.



Once clear of the runway, retract the flaps, lower the spoilers and configure the exterior lights. Start the APU, using the procedure described at the start of this tutorial, in preparation for gate arrival.

FLAPS – RETRACTED
SPOILERS – DOWN
LANDING LIGHTS – OFF
STROBE LIGHTS – OFF
APU – RUN

Shutdown



The ATC controller will give us guidance to the gate. On arrival at the gate allow the APU to power the electrical systems using the technique described previously and apply the parking brakes. Switch off all three engines by putting all three engine cut-off switches on the pedestal to the OFF position.

PARKING BRAKES – ON
FUEL CUT-OFF SWITCHES – OFF



Once the engines have spooled down, switch off the navigation and beacon lights with the controls on the overhead panel.

BEACON LIGHTS – OFF
NAVIGATION LIGHTS – OFF

Congratulations! You have flown the iconic DC-10 across some of the most dramatic landscape in the world and landed safely in Singapore. Give yourself a pat on the back. Maybe it's time to head off to the virtual Raffles Hotel for a well-earned beverage or perhaps a trip to Orchard Road for a meal. Whatever your choice, you have earned it!

PAINT KIT

DC-10 Collection HD 10 to 40 comes supplied with a paint kit to help you create your own liveries.

To locate the paint kit, go to your Flight Simulator Steam Edition DLC folder and look for the numbered DLC folder for the DC-10. Inside this you will find a Just Flight/DC-10 folder in which there is a paint kit folder containing bitmaps and a .psd file for the DC-10.

***Note:** Paint kits are intended for experienced users who have the necessary knowledge of Flight Simulator to be able to add new variations to existing aircraft and who have experience working with the special file formats required. Paint kits also require graphics editing software capable of working with layered image files. The layered files supplied are in PhotoShop (.psd) format.*

CREDITS

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SOFTWARE PIRACY

At Just Flight we invest a significant amount of time, effort and money in developing, manufacturing and publishing all of our flight simulation products. This includes rewarding the programmers and artists whose creativity contributes so much to the products we all enjoy.

A pirate, otherwise known as a thief, makes a profit from the sale of other people's hard work. In some cases he makes more profit than the publishers and developers make from the sale of an original title. Piracy is not just the domain of the casual domestic user but is also a multi-million-pound business conducted by criminals, often with associations with the illegal drugs trade. Buying or downloading pirated copies of programs directly support these illegal operations. Don't be fooled by a load of old tosh about file 'sharing'. The sites that host these 'shared' files are multi-million-pound operations that cover their backsides with the excuse that they are simply a 'gateway' to the files. In fact, they actively encourage piracy and are often funded by advertising. Most of them are illegal money-laundering operations by another name.

The people who really suffer from game piracy are the artists, programmers and other committed game development staff. Piracy and theft directly affects people and their families. Loss of revenue to the games industry through piracy means many are losing their jobs due to cutbacks that have to be made to ensure developers and publishers survive. The logical outcome of this is that eventually the supply of flight simulation programs will dry up because developers think it is not worth the hassle.

It's not just copying software that is against the law. Owning copied software also constitutes a criminal offence, so anyone buying or downloading from these people is also at risk of arrest and prosecution.

To find out more about the implications of piracy please click on the Piracy link on our website at justflight.com.