iniBuilds

A330-200/300/P2F MANUAL

Microsoft Flight Simulator

Preface

FOR SIMULATION USE ONLY - DESIGNED FOR SINGLE-PILOT OPERATIONS

This guide is designed to help provide a straightforward set of instructions to aid in operating the Airbus A330 aircraft. It has been produced using multiple real-world Airbus A330 operator manuals from various dates and sources with modifications to various procedures to make them more manageable under single-pilot operations.

PHOTOSENSITIVE SEIZURE WARNING

A very small percentage of people may experience a seizure when exposed to certain visual images, including flashing lights or patterns that may appear in video games. Even people who have no history of seizures or epilepsy may have an undiagnosed condition that can cause these "photosensitive epileptic seizures" while playing video games.

Immediately stop playing and consult a doctor if you experience any symptoms.

These seizures may have a variety of symptoms, including light-headedness, altered vision, eye or face twitching, jerking, or shaking of arms or legs, disorientation, confusion, or momentary loss of awareness. Seizures may also cause loss of consciousness or convulsions that can lead to injury from falling down or striking nearby objects.

Parents should watch for or ask their children about the above symptoms. Children and teenagers are more likely than adults to experience these seizures.

You may reduce risk of photosensitive epileptic seizures by taking the following precautions:

- Play in a well-lit room.
- Do not play if you are drowsy or fatigued.

If you or any of your relatives have a history of seizures or epilepsy, consult a doctor before playing video games.

Copyright

Version 1.0.1 - September 17th, 2024

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About the Airbus A330

The A330-300 is a twin-engine, wide-body airliner developed and manufactured by European aerospace consortium Airbus. The -300 was the first production variant of the company's A330 family of twin-aisle commercial jets. It took its maiden flight on November 2, 1992 and entered service on January 17, 1994, becoming the largest twin-engine jet to have ever flown at the time.

The A330 program began in the early 1970s as an initiative to expand the offerings that Airbus had started with the A300, the company's first commercial aircraft. The A300, which took its maiden flight on October 28, 1972, was the world's first wide-body airliner powered by two engines. It also incorporated composite components and other cutting-edge innovations. Although sales were slow at first, the A300's twin-engine design proved impressively fuel efficient and it was eventually enthusiastically adopted by numerous airlines around the world. The A330 was developed as a larger successor to the A300. To create the A330, engineers at Airbus lengthened the fuselage of the A300, kept the same wing, and implemented the highest efficiency engines available.

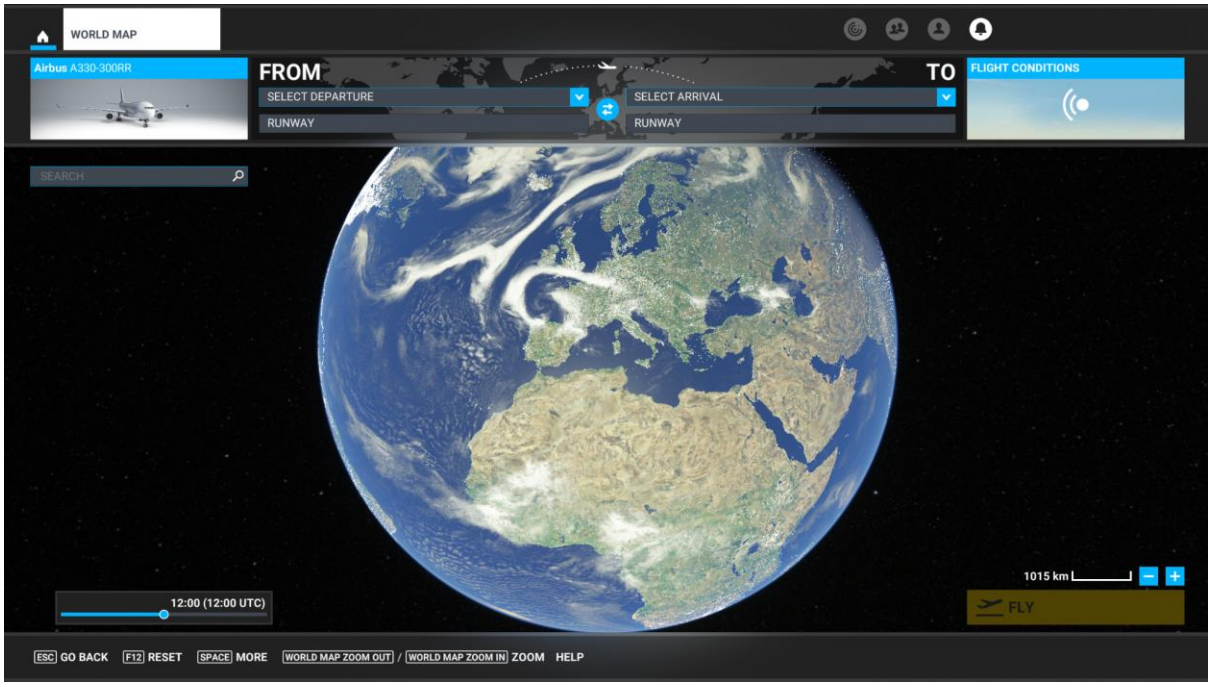
The A330-300 features an advanced glass cockpit and fly-by-wire controls. It is crewed by two and can accommodate up to 440 passengers, although it typically seats 300 in standard configurations. It measures 208 feet, 10 inches in length, stands 55 feet, 1 inch tall, and has a wingspan of 197 feet, 10 inches. It is powered by two high-bypass turbofan engines that each generate up to 71,100 pounds of thrust. The aircraft has a range of 7,300 miles, a service ceiling of 41,100 feet above sea level, and a cruising speed of 541 mph.

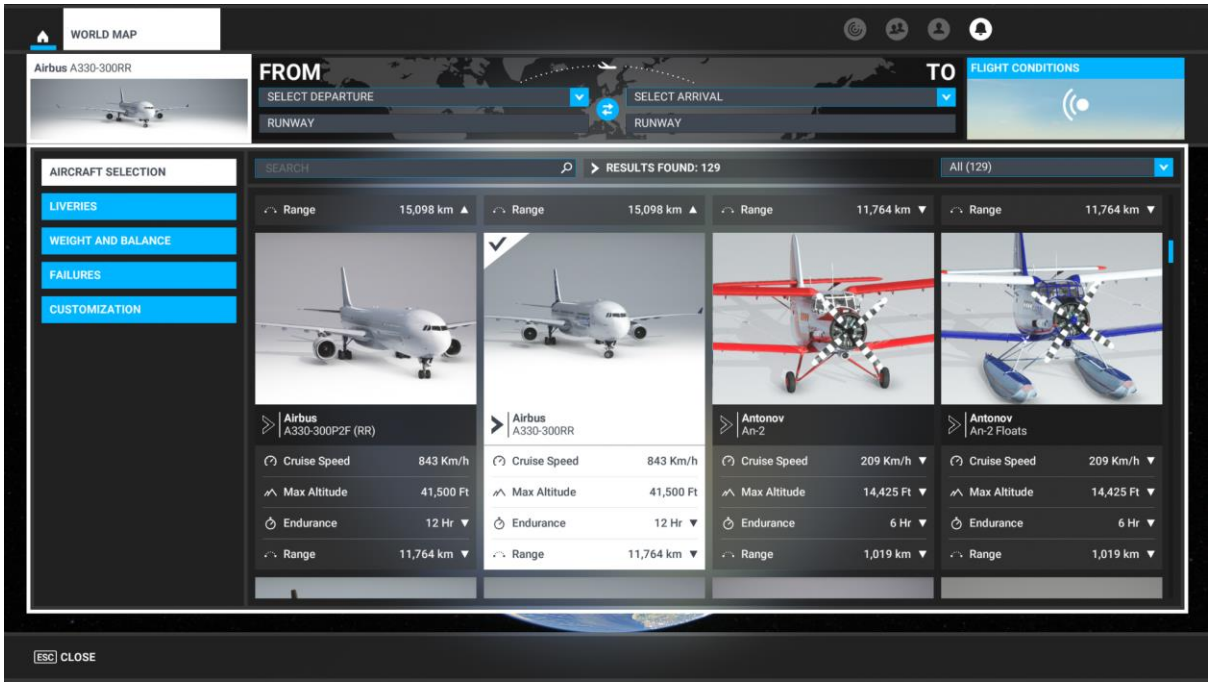
In 2012, Airbus launched a freighter conversion program called the A330P2F (Passenger-to-Freighter). The company converts select existing A330-300 passenger-configured airframes to all-cargo models. The process comprises removing all main-deck passenger seats in each aircraft and installing a powered loading system and a large main-deck cargo door. P2F variants share identical geometries, specifications, and performance characteristics with respective A330-300 passenger-configured models.

Aircraft Selection and Liveries

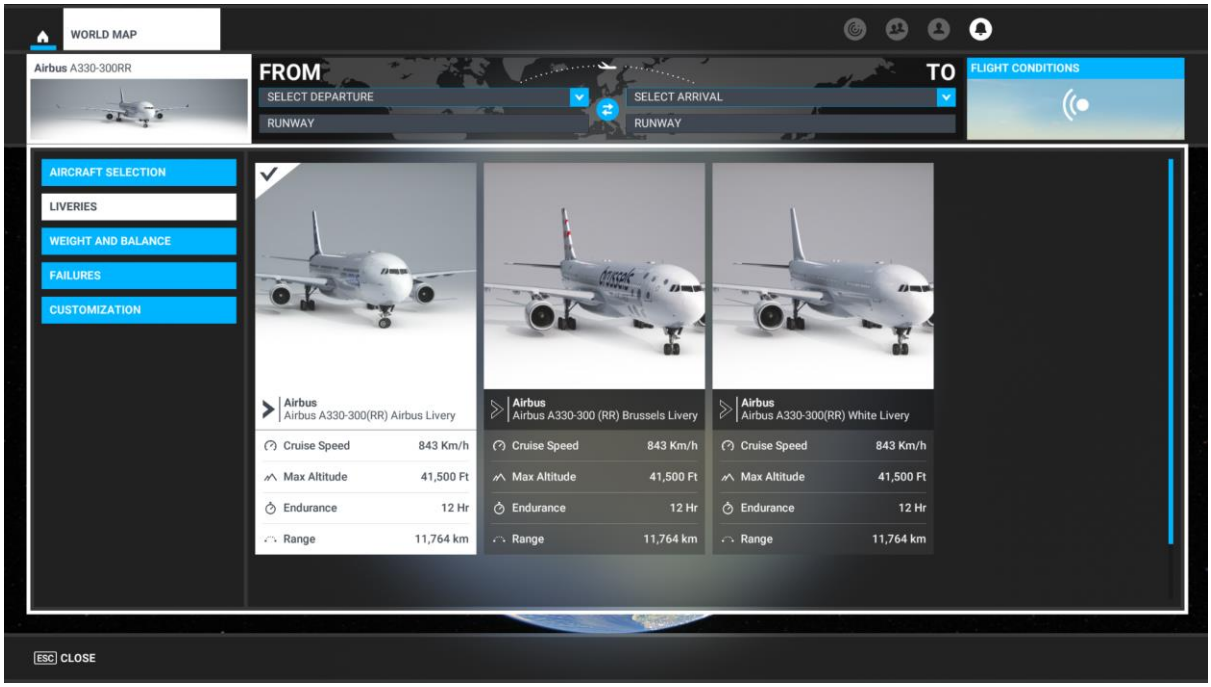
To fly the Airbus A330, you will need to select it from the Aircraft Selection menu.
Click on WORLD MAP in the Main Menu and click the AIRCRAFT SELECTION icon on the top left.

Scroll until you see the Airbus A330 or type "Airbus A330" in the search bar, and select the aircraft.





Click on Liveries to select any of the various designs available for the Airbus A330.


WORLD MAP
Airbus A330-300RR
FROM
SELECT DEPARTURE
RUNWAY
TO
SELECT ARRIVAL
RUNWAY
FLIGHT CONDITIONS
AIRCRAFT SELECTION
LIVERIES
WEIGHT AND BALANCE
FAILURES
CUSTOMIZATION
Airbus
Airbus A330-300(RR) Airbus Livery
Cruise Speed 843 Km/h
Max Altitude 41,500 Ft
Endurance 12 Hr
Range 11,764 km
Airbus
Airbus A330-300 (RR) Brussels Livery
Cruise Speed 843 Km/h
Max Altitude 41,500 Ft
Endurance 12 Hr
Range 11,764 km
Airbus
Airbus A330-300(RR) White Livery
Cruise Speed 843 Km/h
Max Altitude 41,500 Ft
Endurance 12 Hr
Range 11,764 km
ESC CLOSE

Cockpit Interaction

Some knobs within the cockpit have interaction where you can push, pull, or scroll them for their functionality.

This functionality will vary depending on your simulator's specific settings under GENERAL OPTIONS > ACCESSIBILITY.

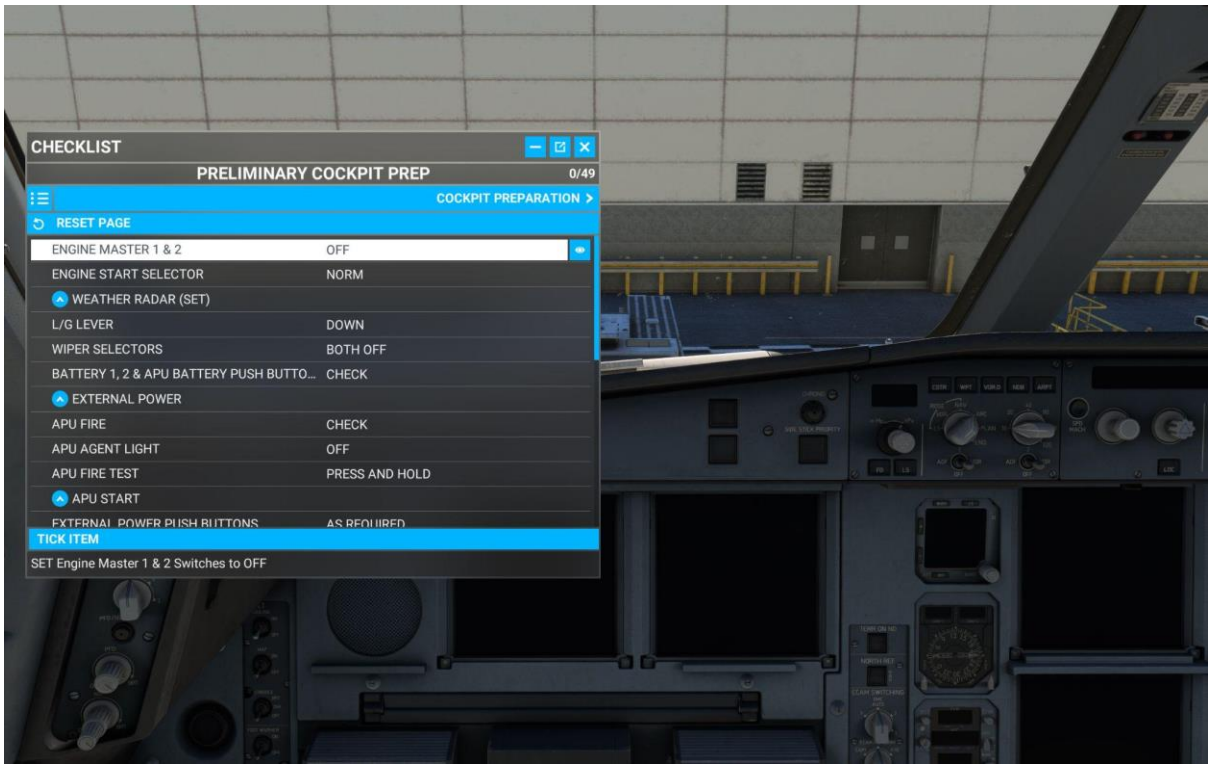
If a control is set to "Lock," left click (and hold the left mouse button) the knob and push the mouse for "push" interaction and pull the mouse for "pull" interaction. Some functions also may have a middle-mouse button "scroll" or "push" and right-mouse click "set" functions.

If it is set to "Legacy," you will see an icon appear to the left, right, above, or below, which you use the middle-mouse wheel to scroll as if a circular arrow, and left click to "set" as if an up or down arrow icon.

On the Xbox, press **A** to interact with the knob and use **A** to "push," **X** to "pull," Right Stick to "scroll," and **B** to finish the control input.

Checklists

While this guide offers comprehensive operational instructions that are functionally complemented by the Quick Reference Card (QRC), iniBuilds has incorporated expedient procedural checklists within the simulator. These can be accessed via the top-of-screen drop-down menu by selecting the Checklist option.



Some items within the in-sim checklist have a drop down for sub-functions, simply click the blue up arrow to open them.

Clicking the blue eye icon to the right of the checklist item will switch your view to the requisite panel where the button/switch/dial/gauge is located. You can use the AUTO COMPLETE option to expediently tick off the item from the checklist.

Limitations

Weight Limits

Airframe Limits

	A330-200		A330-300	
Limitation	**KG**	**Lbs**	**KG**	**Lbs**
Maximum Takeoff Weight (MTOW)	230,000	507,063	233,000	513,676
Maximum Landing Weight	180,000	396,832	187,000	412,264
Maximum Zero Fuel Weight (MZFW)	168,000	370,376	175,000	385,808
Operating Empty Weight (OEW / DOW)	116,000	255,736	121,000	266,759

Under exceptional conditions, an immediate landing is permitted at any weight below MTOW provided the overweight landing procedure is followed. NOTE: Autoland above MLW has not been demonstrated.

Payload Limits

	A330-200		A330-300	
Limitation	**KG**	**Lbs**	**KG**	**Lbs**
Maximum Fuel Quantity	109,176	240,691	76,551	168,765
Maximum Passenger Weight	34,510	75,922	37,400	82,280
Maximum Cargo Hold Weight	18,397	40,558	18,397	40,558

Speeds & Performance Limits

Minimum Control Speeds

	A330-200	A330-300
Minimum Control Speed on Ground (VMCG)	108 KTS IAS	121 KTS IAS
Minimum Control Speed in Air (VMCA)	103 KTS IAS	122 KTS IAS

Maximum Slats/Flaps Speeds (VFE)

Note: Max FL for slats and flaps FL200

Flight Phase	CONF	Slats	Flaps	Ailerons	Max Speed (IAS)
Approach	1	16	0	0	240 KTS
Takeoff and Approach	1+F	16	8	5	215 KTS
Takeoff and Approach	2	20	14	10	196 KTS
Takeoff, Approach and Landing	3	23	22	10	186 KTS
Landing	FULL	23	32	10	180 KTS

Gear Operating Speeds

Maximum Gear Operation Speed extension & retraction VLO	250 KT	M 0.55
Maximum Gear Locked Down Speed VLE	250 KT	M 0.55

Miscellaneous Speeds

Maximum Tire Ground Speed	204 KTS
Maximum Windshield Wiper Operation Speed	230 KTS
Maximum Open Cockpit Window Speed	230 KTS

Flight Maneuvering g-Load Limits

Clean Configuration	+2.5 g	-1 g
Slats Extended Configuration	+2 g	0g

Airport Operation Limitations

Mean Runway Slope	± 2 %
Maximum Runway Altitude Non-Autoland	12 500 ft AMSL

Wind Speed Limitations

	A330-200	**A330-300**
Maximum Tailwind Component (Takeoff and Landing)	15 KTS	10 KTS
Maximum Certified Crosswind for Take Off (Dry Runway)	32 KTS	32 KTS
Computed Demonstrated Crosswind for Landing	40 KTS	40 KTS
Maximum Wind for Passenger and Cargo Door Operation	40 kts	40 KTS

Autoland Limitations

Maximum Headwind Component	35 KTS
Maximum Crosswind Component	20 KTS
Maximum Tailwind Component	10 KTS
Maximum Altitude	9200 FT
Glide Slope	-2.5 to -3.25 degrees

Aircraft Configuration Summary

For awareness and for the specified aircraft modeled, the following table provides the user with a list of optional aircraft systems and functions related to aircraft flight operations.
The "If Installed Table" provides a list of optional systems and functions of the aircraft. The table indicates if the optional systems or functions are installed, or not installed.

A330 Generic		
Item	**System**	**Installed**
2 ADFs	**NAV**	**Yes**
ADS-B OUT	**SURV**	**Yes**
Air Flow Selector AUTO Function	COND	No
ALTN N/W STRG	GEAR	No
AP/FD TCAS	AUTO FLT	No
AP Automatic Disconnection at Minima	**AUTO FLT**	**Yes**
ATSAW	SURV	No
Weather Hazard Prediction Function	**SURV**	**Yes**
Automatic FD Bar Engagement at Go-Around	**AUTO FLT**	**Yes**
Avionics Compartment Access Ladder	**DOOR**	**Yes**
BARO/RADIO OPTION	**NAV**	**Yes**
Battery Discharge Warning	ELEC	No
Brake Fans	**BRAKE**	**Yes**
Bulk Cargo Door	**DOOR**	**Yes**
BUSS	NAV	No
Chemical Oxygen System	**OXY**	**Yes**
CIDS-SDF	SMOKE	No
Cockpit Door Deadbolt	EQUIPMENT	No
Cockpit Fixed Oxygen System External Filling Port	OXY	No
Cockpit Foot Warmer	**EQUIPMENT**	**Yes**
Cockpit Power Outlet	EQUIPMENT	No
Cockpit Side Electrical Heater	EQUIPMENT	No

CVR Data Link Function	COM	No
CVR ERASE Function	COM	No
CPDLC	DATALINK	No
DDRMI	**NAV**	**Yes**
Derated Climb	**ENG**	**Yes**
Derated Takeoff	ENG	No
Descent Profile Optimization (DPO)	AUTO FLT	No
Delta ISA	EIS	No
Door Aural Warning Horn	DOOR	No
DOOR SW OVRD	DOOR	No
Dual Ice Detection System	**ICE**	**Yes**
EGPWS	SURV	No
ELT switch	**COM**	**Yes**
Extended FLEX Takeoff	ENG	No
External Ice Detector Light	**ICE**	**Yes**
EVAC COMMAND	**COM**	**Yes**
ATC MSG	FANS	No
FLS Function in the FMS	AUTO FLT	No
Honeywell FMS 2 Release 1A	**AUTO FLT**	**Yes**
FMS2 (including RF leg capability)	**AUTO FLT**	**Yes**
GLS	AUTO FLT	No
GPS	**NAV**	**Yes**
GPS PRIMARY Function	**NAV**	**Yes**
HF Data Link	COM	No
HUD	SURV	No
IRS Alignment Based on GPS Position	**NAV**	**Yes**
ISIS	**NAV**	**Yes**
Jettison	FUEL	No
Landscape Camera	MISC	No
Man-made Obstacle Function	SURV	No

MMR	**NAV**	**Yes**
NAV Mode Automatically Engaged (Armed) at Go-Around	**AUTO FLT**	**Yes**
OEB Reminder	EIS	No
On-board Mobile Telephony System	COM	No
Optional Applications: DCL, OCL, D-ATIS	FANS	No
PAX SATCOM	COM	No
PWS	**SURV**	**Yes**
QFE BARO Setting	NAV	No
RAAS	SURV	No
Rain Repellent System	RAIN	No
Rising Runway Symbol	EIS	No
RMP Load Function	COM	No
ROW/ROPS	SURV	No
RCPU	CAB PR	No
RNP AR	AUTO FLT	No
ROW/ROPS	SURV	No
SATCOM	COM	No
SDCU	SMOKE	No
Soft Go-Around Function	ENG	No
T2CAS	**SURV**	**Yes**
Tail Strike Pitch Limit Indicator	EIS	No
Taxiing Aid Camera	MISC	No
Thrust Bump	ENG	No
TPIS	**WHEEL**	**Yes**
Trim Tank Pump	**FUEL**	**Yes**

A330-200		
Item	**System**	**Installed**
Avionics Ground Cooling	**COND**	**Yes**
Bulk Cargo Heating	**VENT**	**Yes**

A330-300		
Item	**System**	**Installed**
Avionics Ground Cooling	COND	No
Bulk Cargo Heating	VENT	No

Airbus A330 Specifications

	A330-200	A330-300
Cruise Speed	455 KTAS	
Max Altitude	41,500 ft	
Max Weight	230,000 kg (507,063 lb)	233,000kg (513,676 lbs)
Range	8150 NM	6340 NM
Fuel Capacity	135,972 L (35,924 gal)	95,340L (25,189 gal)
Length	58.37 m (191 ft 3 in)	63.69 m (208 ft 11 in)
Wingspan	60.3 m (197 ft 10 in)	

Important Notes About the Airbus A330

The physical Airbus A330 is typically operated by two pilots, however, iniBuilds has written the procedures for our simulated version for a single pilot.

Airbus aircraft are operated using several core concepts and design philosophies, explained below.

Airbus Golden Rules

1) Fly, navigate and communicate:
   In this order with appropriate tasking.
2) Use the appropriate level of automation at all times.
3) Understand the Flight Mode Annunciator (FMA) at all times.
4) Take action if events do not evolve as expected.

The FMA (Flight Mode Annunciator)

The FMA is one of the most critically important systems on Airbus aircraft as it provides information to the air crew on automated aircraft actions in real time and indicates what actions aircraft systems will undertake in the near future.

Where is the FMA located?
The boxed red area shows the **FMA**.

What do the colors mean?
Blue indicates **armed** and **Green** indicates **engaged**. In the image we can see CLB (Climb) mode is armed along with NAV (Lateral Navigation) mode.

The FMA indicates a condition change by displaying a colored box. To indicate a reverted mode, the box will flash, or it will flash accompanied by a triple clicking sound to draw pilot attention. An example follows of a box displayed when NAV has changed to HDG.

Each column on the FMA shows what the Autopilot (AP) or Auto Thrust (A/THR) is undertaking.

Orange = Autothrust operation Indicates the aircraft's thrust setting.

Red = Vertical mode	Indicates the vertical mode the Flight Director and Autopilot are following.
Grey = Lateral mode	Indicates the lateral mode the Flight Director and Autopilot are following.
Purple = Approach capability	Indicates the Autopilot's current maximum approach capability. CAT 3 DUAL for example, is the equivalent of a CAT III (zero visibility) approach.
Pink = Autopilot, flight director and A/THR state	Indicates the status of the currently engaged Autopilot and Flight Directors, as well as Autothrust engagement condition.

Lights out concept

When configuring the aircraft during the cockpit setup phase, **all white lights should be selected off.** The normal in-flight configuration has no white lights shown at all.

Cockpit light color guide:

Blue = Temporary selection	Some examples include auto brake selection, engine and wing anti-ice, APU, and External power. These are not normally selected for the entire flight, they are "temporarily" selected.
Amber = Caution **Red = Warning**	To alert the pilot to abnormal and emergency conditions, the relevant system push button light will be highlighted.

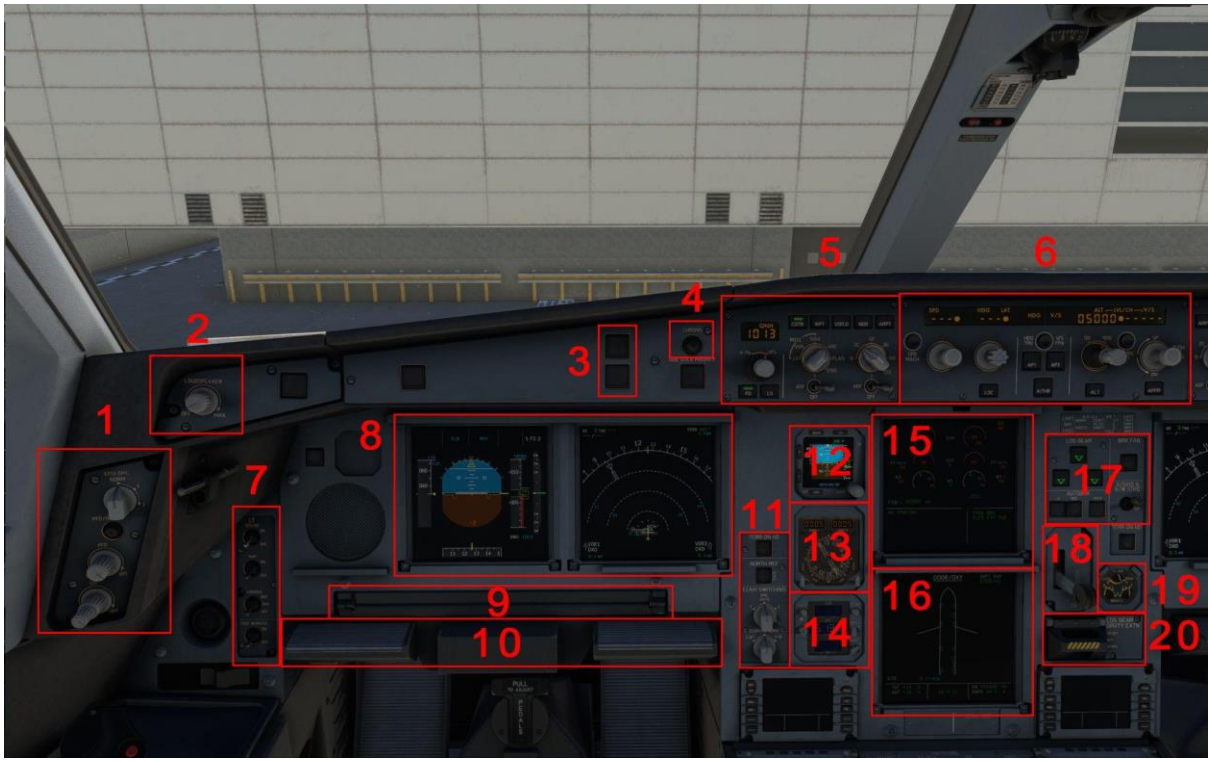
Note – on the ground, before engine start, some lights will indicate the **amber** abnormal status. This is normal.

Fly by wire concept

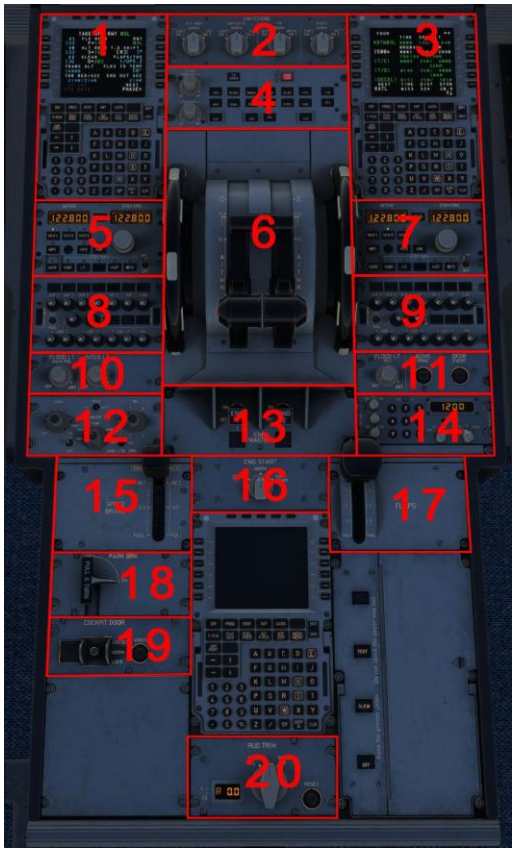
Modern Airbus aircraft are fitted with a sophisticated Fly-By-Wire (FBW) system.

The system is based on maintaining a specified G force (acceleration force). During normal, level flight, the FBW system will hold the force (1G – level, no bank turns, no acceleration) if the flight controls are released from manual actuation. Airbus FBW will not hold pitch or bank angles; it will hold the aircraft to a G force (regardless of pitch or bank) with auto trim and elevators.

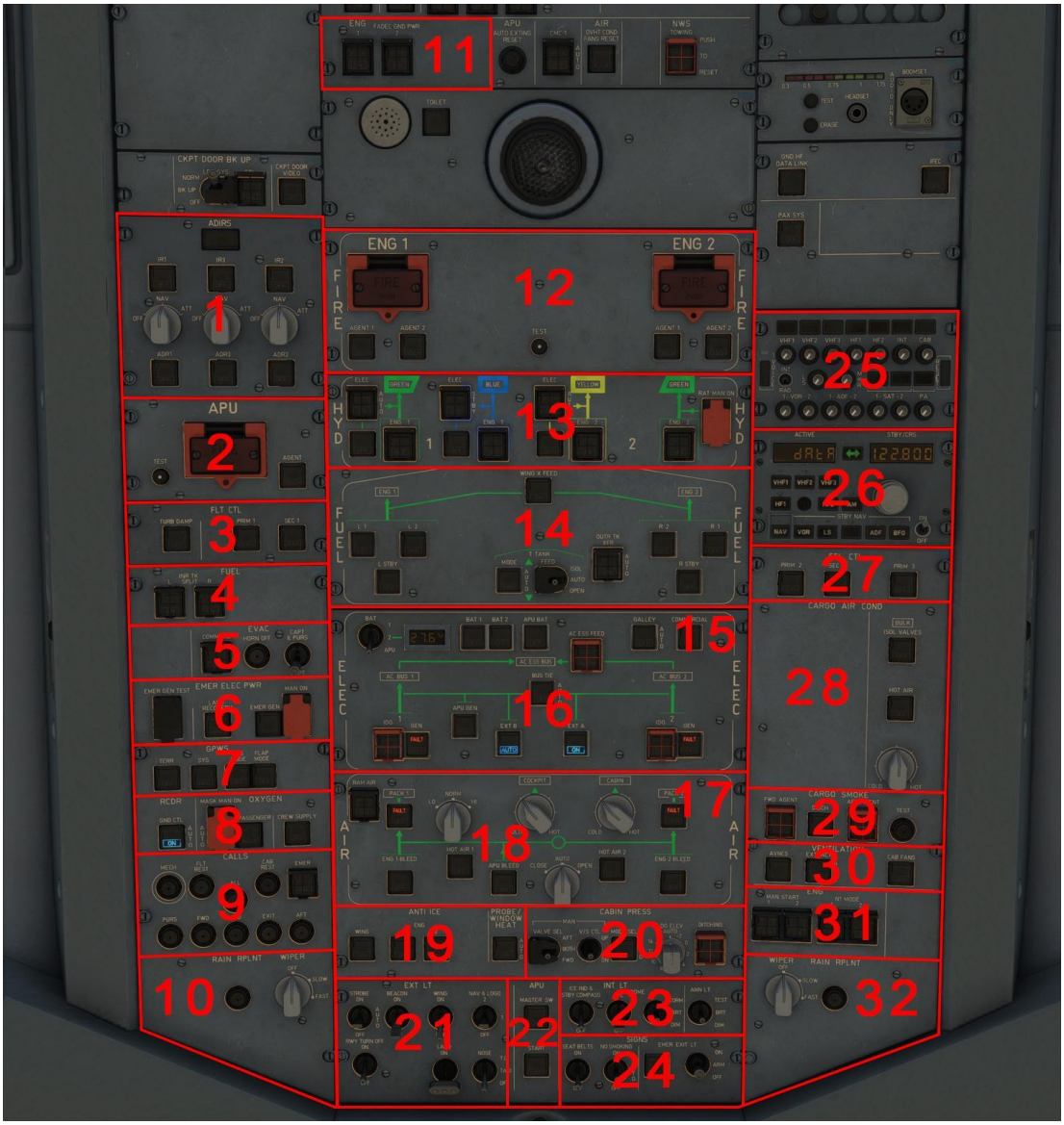
Cockpit Layout



1. PFD & ND Brightness knobs
2. Loudspeaker knob
3. CPT Master Warning / Caution lights
4. Chronometer
5. CPT EFIS
6. Flight Control Unit (FCU)
7. CPT Lighting Panel
8. CPT Primary Flight Display (PFD) / Navigation Display (ND)
9. CPT Tray Table
10. CPT Footrest
11. CPT Terrain on ND & True reference selector
12. Integrated Standby Instrument System (ISIS)
13. Digital Distance and Radio Magnetic Indicator (DDRMI)
14. Clock
15. Engine and Warning Display
16. System/Status Display
17. Gear Indicator / Auto Brake panel
18. Landing Gear Lever
19. Brakes and Accumulator pressure indicator
20. Landing gear gravity extension



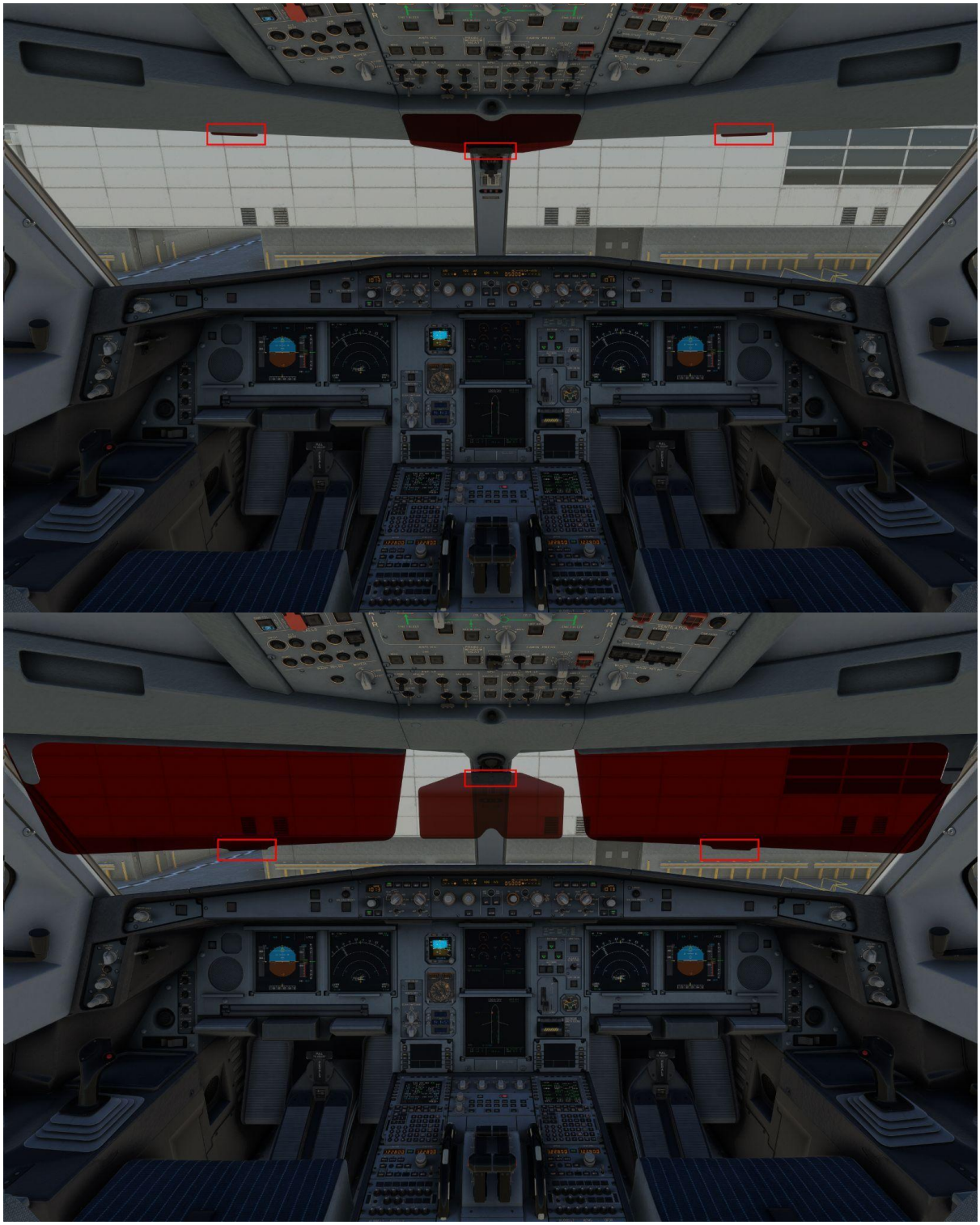
1. CPT MCDU
2. Switching Panel
3. FO FMCDU
4. ECAM Control Panel
5. CPT Radio Management Panel (RMP)
6. Thrust Levers / Pitch Trim Wheels
7. FO Radio Management Panel (RMP)
8. CPT Audio Control Panel (ACP)
9. FO Audio Control Panel (ACP)
10. Center Panel Flood and Integral Lighting
11. Pedestal Flood Lighting
12. Weather Radar Panel
13. Engine masters
14. Transponder
15. Speed Brake Lever
16. Engine Start Selector
17. Flaps Lever
18. Parking Brake
19. Cockpit Door Lock
20. Rudder Trim



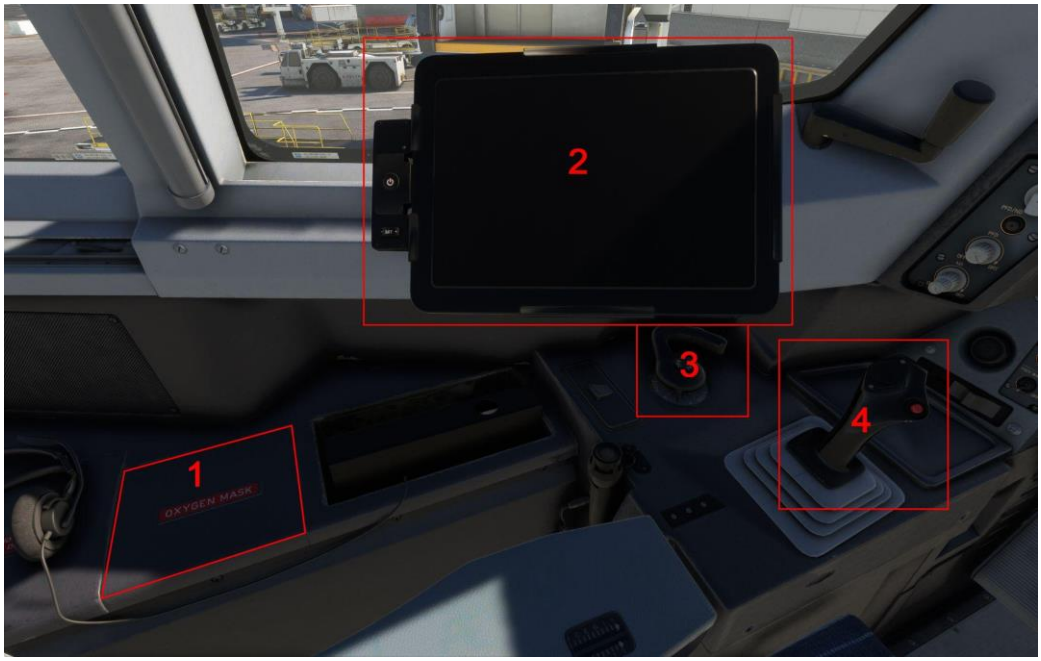
1. ADIRS Switches
2. APU Fire Panel
3. Flight Control Panel
4. Fuel Inner Tank Split Buttons
5. Evacuation Panel
6. Emergency Electrical Power
7. Ground Proximity Warning System (GPWS)
8. Recorder Ground Control and Crew Oxygen Supply
9. Cabin Call System
10. CAPT Windscreen Wiper
11. FADEC Ground Control
12. Engine Fire Panel
13. Hydraulic Panel
14. Fuel Control Panel
15. Electrical Control Panel
16. External Power Push Buttons
17. Air Conditioning Panel
18. APU Bleed Push Button
19. Anti-ice Panel
20. Cabin Pressurization Panel
21. Exterior Lighting Panel
22. APU Master Switch and Start Push Buttons
23. Interior Lighting Panel
24. Passenger Signs Panel
25. Observer Audio Control Panel (ACP)
26. Observer Radio Management Panel (RMP)
27. Flight Control Panel
28. Cargo Air Conditioning Panel
29. Cargo Smoke Detection Panel
30. Ventilation Panel
31. Manual Engine Start Panel
32. FO Windscreen Wiper

Other Controls

Sun visor click spots

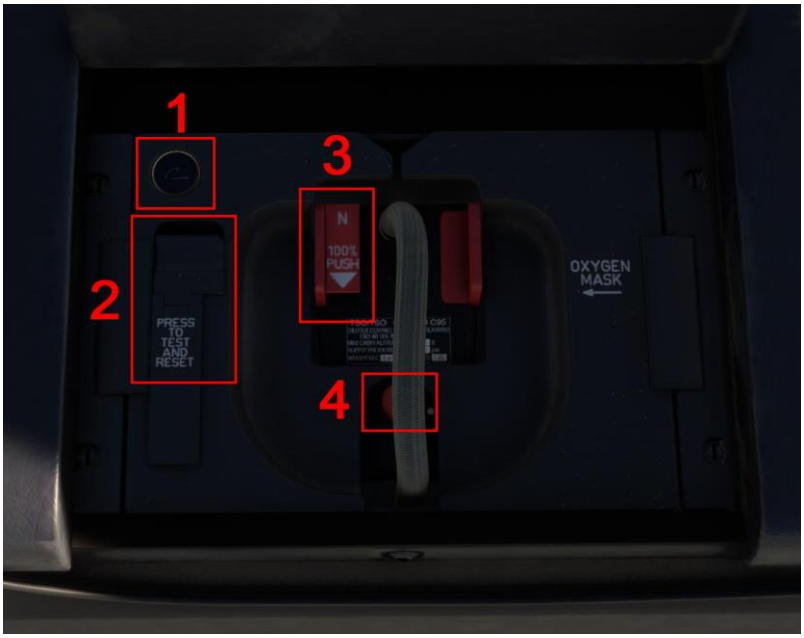


Captain left side



1. Oxygen Mask
2. Electronic Flight Bag (EFB)
3. Tiller and NWS Button
4. CPT Sidestick

Oxygen Mask



1. Blinker
2. Test button
3. Normal / 100% Oxygen selector
4. Overpressure selector

Glareshield & FCU Lighting

1. Glareshield Integral Lighting knob

2. FCU Display Brightness knob

Electronic Flight Bag (EFB)

There is an Electronic Flight Bag (EFB) located on either side of the cockpit (Captain and First Officer) which is intrinsically linked to the aircraft Flight Management System (FMS). It is also linked to some core simulator functions like requesting the jetway, requesting ground power,

setting default aircraft spawn states, etc. Simply click the Menu buttons on the left to navigate the pages.

Dashboard Page – Shows your current flight details as set in the FMS, along with METAR for your departure and arrival airports. There is also a METAR search functionality.

OFP Page – Request and show the Simbrief Operational Flight Plan (OFP).
Your Simbrief Pilot ID must be set within the Settings Page for this feature to work.

Ground Page – Controls doors on the aircraft along with requesting external Ground Services Equipment, Jetway, Pushback and manual steering of the aircraft during pushback.

Payload Page – This page allows you to set the fuel and load on the aircraft and apply it to the FMS.

Panel State Page – This page allows you to select the state of the aircraft, shortcutting certain procedures.

Takeoff Page – This page allows you to set the conditions for takeoff to calculate your performance references.

When you click in the RWY box a new page will pop up showing you which runways are available at your departure airport.

Upon clicking any of the manual entry boxes, a pop-up keyboard will display. Commands entered into this keyboard will override any default key bindings that are set.
Close the keyboard by clicking the down arrow on the bottom right-hand corner of the page.
You may manually enter each parameter, or you can press the SYNC button, which will synchronize the selected runway in the MCDU, actual weather conditions, and the takeoff weight from the MCDU Init (initialization) B page.

Once all the information has been selected or entered, click the Calculate button to show your performance references and click the Send to FMGS button to send to the FMC.

NOTE:

- The EFB is unable to determine if the conditions are DRY or WET, you must select the correct option.
- If you select calculate before the payload & fuel loading is complete you will receive the error: "Please complete loading before calculating takeoff performance". The EFB is unable to estimate the THS trim setting for takeoff during the loading phase. Once the loading is complete you will be able to obtain your takeoff performance.

Options Page.

The EFB can be turned off by pressing the power button to the left-hand side of the EFB. There are also brightness buttons here to increase or decrease the screen brightness.

Aircraft Systems

The A330 has many advanced systems, many of which are tightly integrated in function with each other. The following section introduces the core systems required to successfully operate the aircraft in Microsoft Flight Simulator.

Flight Management Guidance and Envelope System (FMGES)

The Flight Management Guidance and Envelope System (FMGES) comprises the following units:

- Two Flight Management Guidance and Envelope Computers (FMGEC).
- Three Multipurpose Control and Display Units (MCDU) (third MCDU is not modeled in this simulation).
- One Flight Control Unit (FCU).
- One Flight Management source selection device (not modeled in this simulation).

The Flight Management Guidance and Envelope System (FMGES) provides predictions of flight time, mileage, speed, economy profiles, and altitude. It reduces cockpit workload, improves efficiency, and eliminates many routine operations generally performed by the flight crew.

Managed vs Selected Guidance

The FMGES computes the aircraft position continuously, using stored aircraft performance data and navigation data. Therefore, it can steer the aircraft along a preplanned route and vertical and speed profiles. This type of guidance is known as “managed”.
If the flight crew wants to temporarily modify any flight parameter (SPD, V/S, HDG, etc.), they may do so by using the various Flight Control Unit (FCU) selectors. The FMGES then guides the aircraft to the target value of this parameter that they have selected. This type of guidance is known as “selected”.

Flight Management Guidance and Envelope Computer (FMGEC)

Each FMGEC is divided into four main parts:
The Flight Management (FM) part controls the following functions:

- Navigation and management of navigation radios.
- Management of flight planning.
- Prediction and optimization of performance.
- Display management.

The Flight Guidance (FG) part performs the following functions:

- Autopilot (AP) command.
- Flight Director (FD) command.
- Autothrust (A/THR) command.

The Flight Envelope (FE) part controls the following functions:

- Computation of data for the flight envelope and speed functions.
- Monitoring of parameters used by FG and FE parts.
- Windshear and aft Center of Gravity (CG) detection.
- Computation of GW and CG information.

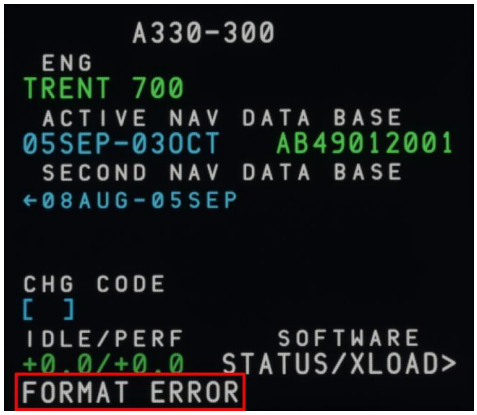
The Fault Isolation and Detection System (FIDS) part performs the following functions:

- Acquisition and concentration of maintenance data.
- Interface with the Central Maintenance Computer (CMC).

Multipurpose Control and Display Unit (MCDU)

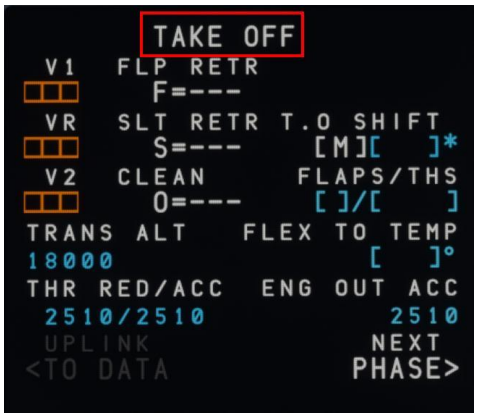
Two MCDUs are installed on the pedestal for flight crew loading and data display. The MCDU allows the flight crew to interface with the FMGEC by selection of a flight plan for lateral and vertical flight paths and speed profiles. The flight crew may also modify selected navigation or performance data and specific functions of Flight Management (revised flight plan, secondary flight plan, etc.).

Data that is entered into the MCDU that is illogical or beyond the aircraft's capabilities will either be disregarded or will generate an advisory message.

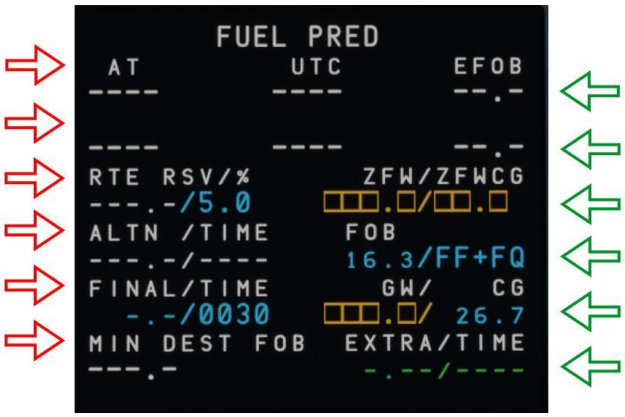


The MCDU includes a display that generates 14 lines of 24 characters each, including:

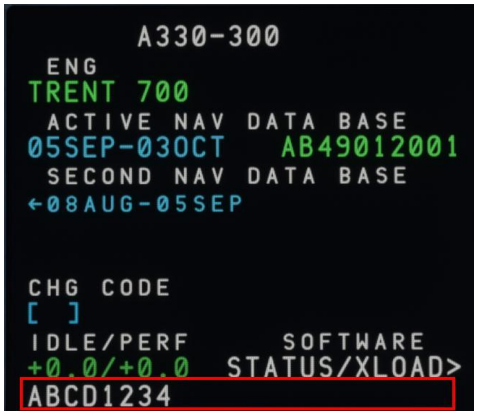
- A title line that gives the name of the current page in block letters.



- Six label lines, each of which names the data displayed just below it (on the data field line).
- Six data field lines that display computed data or data inserted by the flight crew.



- The scratchpad line that displays:
  - Specific messages.
  - Information the flight crew has entered by means of the number and letter keys and which can then be moved to one of the data fields.



MCDU Controls and indicators:

The keyboard includes:

- Function and Page keys
  Call up functions and pages the flight crew uses for flight management functions and computations.

- ↑↓ (or SLEW) keys
  Move a page up or down to display portions that are off the screen.

- ←→ (NEXT or PREVIOUS) page keys
  Moves to the next page of a multi-page element. An arrow in the top right corner indicates that another page is available.

- AIRPORT key
  Call up the flight plan page that contains the next airport along the current flight plan. Successive pushes on the key show the alternate airport, the origin airport (before takeoff), and the next airport again.

- Number and letter keys allow the flight crew to insert data in the scratchpad so that they can use a line select key to enter it in the main display.

- Two keys have special functions:
  CLR (clear) key Erases material (messages or inserted data) from the scratchpad or from certain areas of displayed pages.
  OVFY (overfly) key Allows the aircraft to overfly a selected waypoint.

Use and operation of the MCDU is covered in the quick start guide.

Flight Control Unit (FCU or Autopilot)

Basic Modes

Selected vs. managed modes, how do we change mode and what do they do?

- Selected is when the knob is pulled out towards you, this means you have taken control away from the auto flight system.
- Managed is done by pushing the knob so giving control back to the auto flight system.

The AP is controlled by the FCU (Flight Control Unit) pictured below.

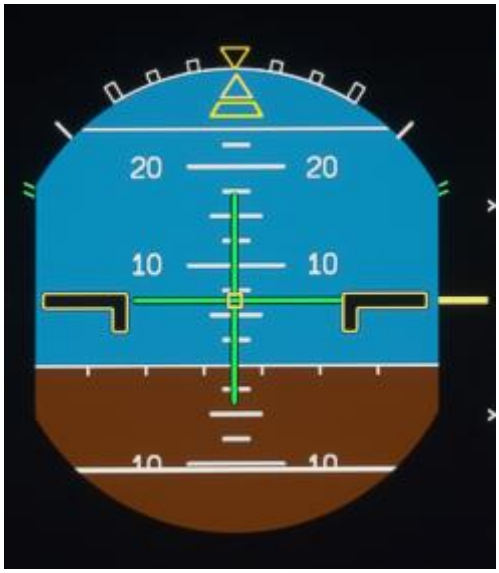
1) SPD/MACH push button:
Pushing this button changes the SPD target to the corresponding MACH target and vice versa.

2) SPD/MACH knob:
When pulled, this knob controls speed in IAS or MACH depending on altitude or if the SPD MACH button is pressed (upper left, 1).
When pushed, speed is 'managed' from the FMS.

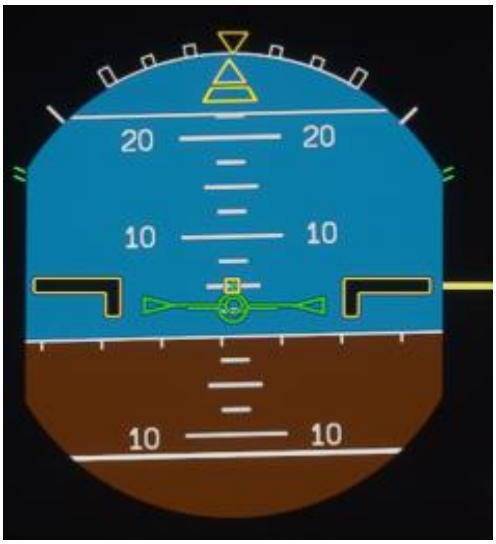
3) HDG (Heading) knob:
When pulled, this knob controls heading or track. You can swap between heading and track mode by pressing the HDG TRK button (5).
Pushing the knob arms managed NAV or within a set margin to the NAV track will automatically switch to NAV.

4) LOC (Localizer) push button:
Pushing this pushbutton Arms, engages, or disengages the ILS LOC mode.
This mode is normally used for localizer only approaches using managed lateral guidance with selected vertical guidance.

5) HDG V/S – TRK FPA push button:
The pilot uses this push button to select HDG (associated with V/S) or TRK (associated with FPA).
Pushing it displays the Flight Path Vector (FPV) on the Primary Flight Display (PFD) or deletes it.
On the PFD, it changes the FD crossbar display (with the aircraft attitude as its reference) to the aircraft Flight Path Director (with the flight path vector as its reference) and vice versa.



HDG/VS



TRK/FPA

The heading reference changes into track reference in the HDG/TRK window and vice versa.

The vertical speed reference target changes into a flight path angle reference target in the V/S-FPA window and vice versa.

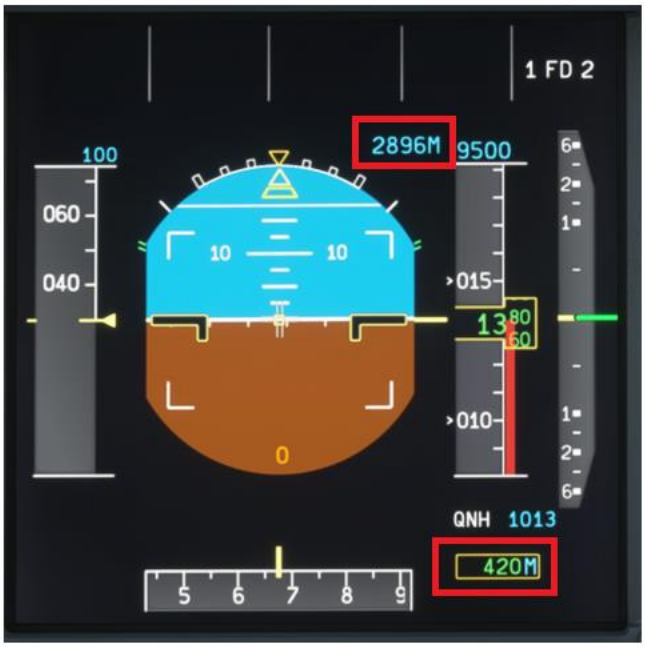
6) AP Engagement push buttons:
AP1 will engage Autopilot 1, normally associated with the Captain side.
AP2 will engage Autopilot 2, normally associated with the First Officer side.
Engaging both AP's will provide system redundancy requirements for low visibility (CAT 2 or above) approaches and autoland capabilities.
Disengaging the AP is usually done with the instinctive AP disconnect buttons on the side stick.

7) A/THR (Autothrust) push button:
The flight crew uses this push button to arm, activate or disconnect the autothrust.
Disengaging the A/THR is usually done with the instinctive A/THR disconnect buttons on the thrust levers.

8) Altitude knob:
When pulled sets OPEN CLIMB/OPEN DES or LVL change in other terms. If altitude is above you OPEN CLB if below you OPEN DES.
When pushed this sets CLB/DES or VNAV in other terms. This mode cannot always be engaged as the situation depends on the flight mode and phase of flight. The aircraft also needs to be in a managed lateral mode (NAV) to engage any VNAV mode.
The inner knob is a switch to select between 100 or 1,000 feet increments.

9) ALT (Altitude) push button:
This pushbutton is used to command an immediate level off.

10) METRIC ALT push button:
Can toggle between displaying altitude in meters (metric) or feet (imperial) on the primary flight displays.



11) VS or FPA selector knob:
Pulling changes from vertical mode to VS/FPA mode and the aircraft will comply with what is set in the window. Please be aware that Airbus aircraft can be slow to follow large VS orders as the AP limits G forces imparted for passenger comfort.
Pushing the knob will set VS to 0 and command the aircraft to level off. This is used when you need to level off quickly.

Other Flight Crew Interfaces

Thrust Levers

The thrust levers serve as the primary link between the Flight Management Guidance and Envelope Computer (FMGEC), the Full Authority Digital Engine Control System (FADEC), and the flight crew. Their functions include:

- Activating the autothrust during takeoff when FLX or TOGA is selected.
- Regulating the maximum thrust level when the autothrust is engaged.
- Deactivating the autothrust system when the flight crew moves the levers to the IDLE position.
- Enabling manual control of thrust when the autothrust is not in use.
- Initiating standard modes like takeoff or go-around when TOGA (or FLX for takeoff) is selected.

- Configure the autothrust to its armed mode when the levers are positioned between IDLE and the CL detent or between IDLE and MCT (one engine inoperative).

Electronic Flight Instruments (EFIS)

Two Primary Flight Displays (PFD) and Navigation Displays (ND) continuously supply the flight crew with guidance for flight, navigation details, and system advice throughout all phases of the flight.

There are EFIS control panels positioned at each end of the glareshield; these are responsible for managing both the Primary and Navigation Displays. These panels feature controls for selecting different modes on the PFD, including a selector to display the barometric altimeter setting. On the ND, pilots can choose from various distance ranges, and there are two switches available for displaying either the left or right VOR/ADF bearing pointers on the ND.

Radio and Transponder Functions

Radio Management Panel (RMP) & Audio Control Panel (ACP)

If using the in-sim ATC menu functions to change frequency, the radio will automatically update to changes, however you can manually tune the required frequency.

1) Active Frequency Display
Displays the current radio frequency on the selected radio. For example, in the picture above: VHF1 is the selected radio, so the active frequency on VHF1 is currently 122.800.

2) Transfer Key
Pressing this key moves the active frequency to the standby window and the standby frequency to the active window.
This tunes the selected receiver to the new active frequency.

3) Standby Frequency/Course Display
A display window shows a standby frequency that the pilot can activate by pressing the transfer key or change by rotating the tuning knobs.

4) Radio Communication Selection Keys
When the pilot presses one of these keys:
- The ACTIVE window displays the frequency set on that radio.
- The STBY/CRS window displays the selected standby frequency or course.
- The selected key displays a green monitor light.

5) Frequency Selector Knob
The pilot uses these knobs to select the STBY frequency or CRS.

The outer knob controls whole numbers; the inner knob controls decimal fractions.

6) Radio navigation Selection Keys
The pilot presses one of these keys to select a navigation radio to control through this RMP. This is used for manual radio navigation tuning only. This turns on the key's green monitor light.

7) RMP ON/OFF Control
Controls the RMP power supply.

8) Radio Transmission Keys and Reception Knobs
When pressed, the associated channel is selected for transmission. The three green lines display. The pilot can deselect the channel by pressing the push button again, or by selecting another channel.
Pressing and releasing the knob (knob out) selects the associated audio reception channel and the integral white light activates. Rotating the knob adjusts the volume.

9) Intercom / Radio Switch

10) Navigation Reception Knobs
Pressing and releasing each knob (knob out) selects the associated audio reception channel and the integral white light activates. Rotating the knob adjusts the volume.

Transponder Panel

If using the in-sim ATC menu functions to change the squawk code, the transponder will automatically adjust to this change, however you can manually tune the required code.

1) Mode Selector
   STBY: Both transponders are powered but do not activate.
   ON: Selected transponder activates.
   AUTO: In flight selected transponder activates.

2) Transponder Selector
   Switch between transponder 1 and 2.

3) Altitude Repeating Switch
   ON: The transponder sends barometric altitude data, equivalent to Mode C.
   OFF: No altitude data transmission. If the TCAS is installed, the upper ECAM displays "TCAS STBY" in green.

4) Keypad
   The flight crew uses the keypad to set the code assigned by ATC. To enter a new code the previous one has to be cleared first using the CLR key.

5) Code Display
   The window displays the selected code.

6) TCAS Traffic selector switch

7) TCAS Mode Selector switch
   TA/RA: Normal position.
   TA: The TCAS does not generate any vertical orders. This mode should be used, in case of degraded aircraft performance (engine failure, landing gear extended, or approach on parallel runways).
   STBY: The TCAS is on standby.

8) Transponder Ident button.

Weather Radar (WXR)

The Airbus A330 features a weather radar which is shown on the Navigation Display (ND) screen.

1) Gain knob
   This knob is used to adjust the sensitivity of the radar. CAL is the normal position,

2) Radar switch
   This switch turns either radar 1 or radar 2 on or both off when in the middle position.

3) Predictive windshear switch (not modeled in this aircraft)
   Activates or deactivates the predictive windshear function

4) Display mode selector (only WX mode is modeled in this aircraft)
   - WX: Weather mode: Colors indicate the intensity of the precipitation
   - WX+T: Weather and Turbulence Mode: In addition to WX mode, turbulence areas will be displayed in magenta
   - TURB: Turbulence mode: Turbulence areas will be displayed in magenta
   - MAP: Map mode: radar operates in ground mapping mode

5) Tilt knob
   This knob adjusts the tilt of the radar. Zero indicates the horizon reference

6) Ground Clutter Suppression switch (not modeled in this aircraft)
   Not modeled in this aircraft

Operations and Techniques

This section outlines the procedures and techniques required to operate the A330 safely and efficiently throughout all phases of flight.

The sections are divided as follows:

Walk-through Guide: A complete A to B flight from cold and dark to shutdown to get you up and running.

Normal Checklist: To be used to *Confirm* procedures have been completed correctly in prior flows. These are available as a separate document.

Simplified Procedures: Condensed description of flows for quick reference. Normally, actions are committed to memory, with this guide as a quick reference tool.

Walk-through Guide

We are going to simulate a scheduled passenger service from Atlanta, USA (KATL) to Detroit, USA (KDTW). We will use the built-in Simbrief functionality and assume the user is familiar with creating and exporting a Simbrief flight plan.

The procedures used here are not meant to replicate full real-world operations; this will, however, get the pilot airborne and flying in the minimum amount of time. We will be flying the A330-300, passenger configuration with Rolls-Royce Trent 700 engines. The operation is the same for all other A330 variants contained in this manual. Please review the differences section at the end of this manual where we discuss the changes applicable to the other variants.

We are assuming we have selected the aircraft and loaded it at an available stand at KATL cold and dark.

Preliminary Cockpit Preparation

You can use the in-sim checklist to prepare the aircraft or simulate arriving at the aircraft prepared by an engineer with the ground power unit (GPU) or auxiliary power unit (APU) on. To do this, select Panel State (1) on the EFB and select 'On APU' or 'On GPU' as required. The

simplified procedures checklist can also be used as a basic guide to supplement this walk-through.

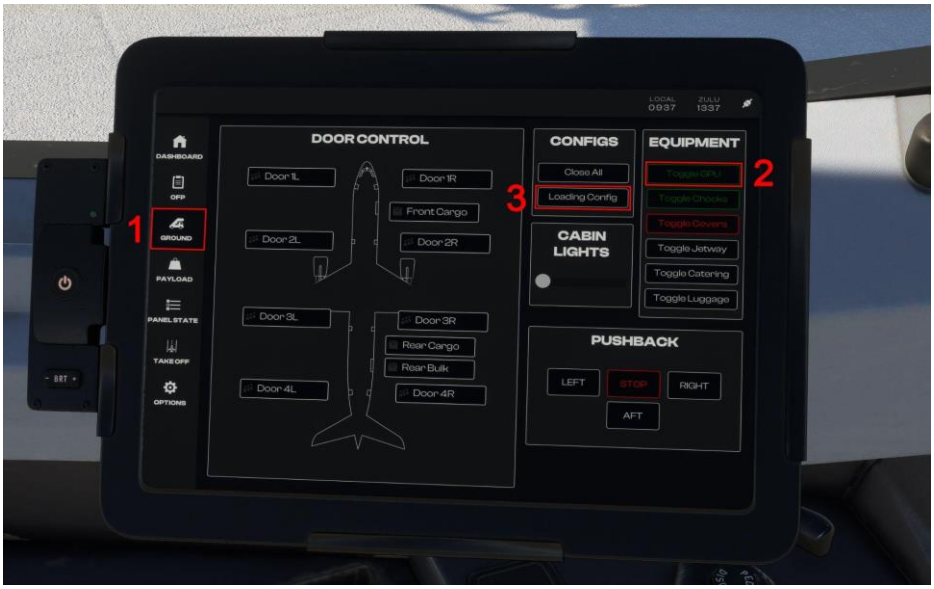
Note – if the EFB screen appears blank, press the on button or increase the brightness.

Ensure your Simbrief Pilot ID (1) is entered in the EFB Options tab.
Note here that when entering text information, controls to the simulator are temporarily disabled. To exit this condition, press the remove keyboard function on the EFB (2).

Ensure that you are on the EFB Dashboard page (1) and press the download Simbrief icon (2).

Flight Number, Departure, Destination and Alternate Airfield data will be populated if the uplink is successful. The OFP page of the EFB will also be populated.

You can simulate opening the required doors for loading from the EFB Ground (1) page and pressing the Loading Config button (3). As You should now be running the aircraft on the APU, you can disconnect the GPU by pressing the Toggle GPU button (2).



To load passengers and cargo you will select the Ground page (1) from the EFB shortcuts.
Press (2) to automatically uplink the information from the Simbrief plan.
You can manually select the Zero Fuel Weight (ZFW) and Fuel load manually using the sliders. If the EFB option to use ZFW is set to 'No' then the pilot can select the number of passengers and cargo weight manually instead. Once the desired values have been entered, pressing the Apply Load (3) button will start to add the payload.

You are given the option to set the loading speed of the aircraft at this point using 3 options.

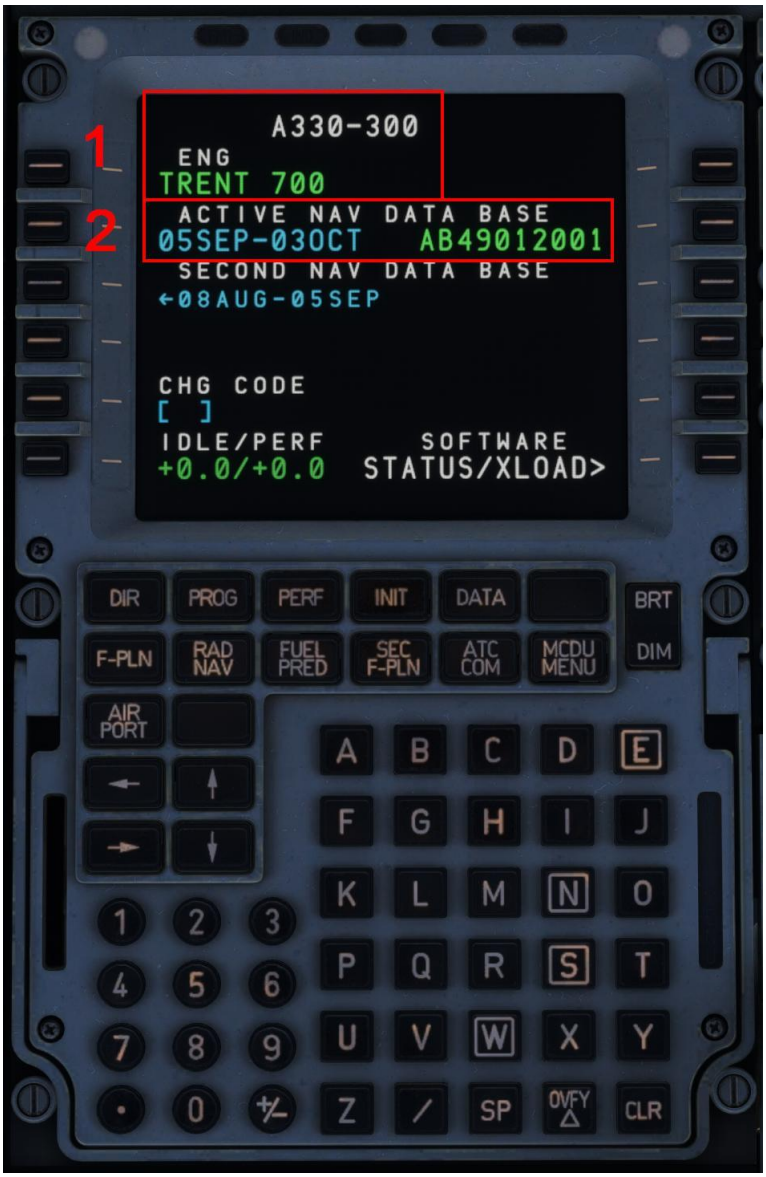
The aircraft should now have power applied and running on its own with a load in progress or complete.

The aircraft will automatically run through its power-up test as indicated by the screen displays.

While the aircraft is running through its power-up test, you can start preparing flight details and passenger/cargo load.

In normal real-world operations, the aircraft Flight Management Guidance and Envelope System (FMGES) is initialized at this stage via the Multipurpose Control and Display Unit (MCDU) so that pre-flight planning data can be sent and received by the airline operations control room.

The MCDU will normally be on the Aircraft Status page after the power-up test. Here you will check if the aircraft and engine type (1) are correct. You can also change the navigation database (2) if required by selecting L3.



If the MCDU has not initialized on this page, or you have inadvertently selected another page, press DATA, then select key L4 for A/C STATUS.

To initialize the flight, press the INIT page (1) key to bring up the INIT A page on the MCDU. If the Simbrief ID number is entered correctly, you should see an INIT REQUEST* prompt next to line select key R2. Press this to uplink the currently saved Simbrief flight. You can also manually enter the city pair (departure and destination airport ICAO) to load the active flight plan. For example, type KATL/KDTW into the scratchpad and press line select key R1. Confirmation of the saved route (if available) will be displayed.

The MCDU has now been initialized.

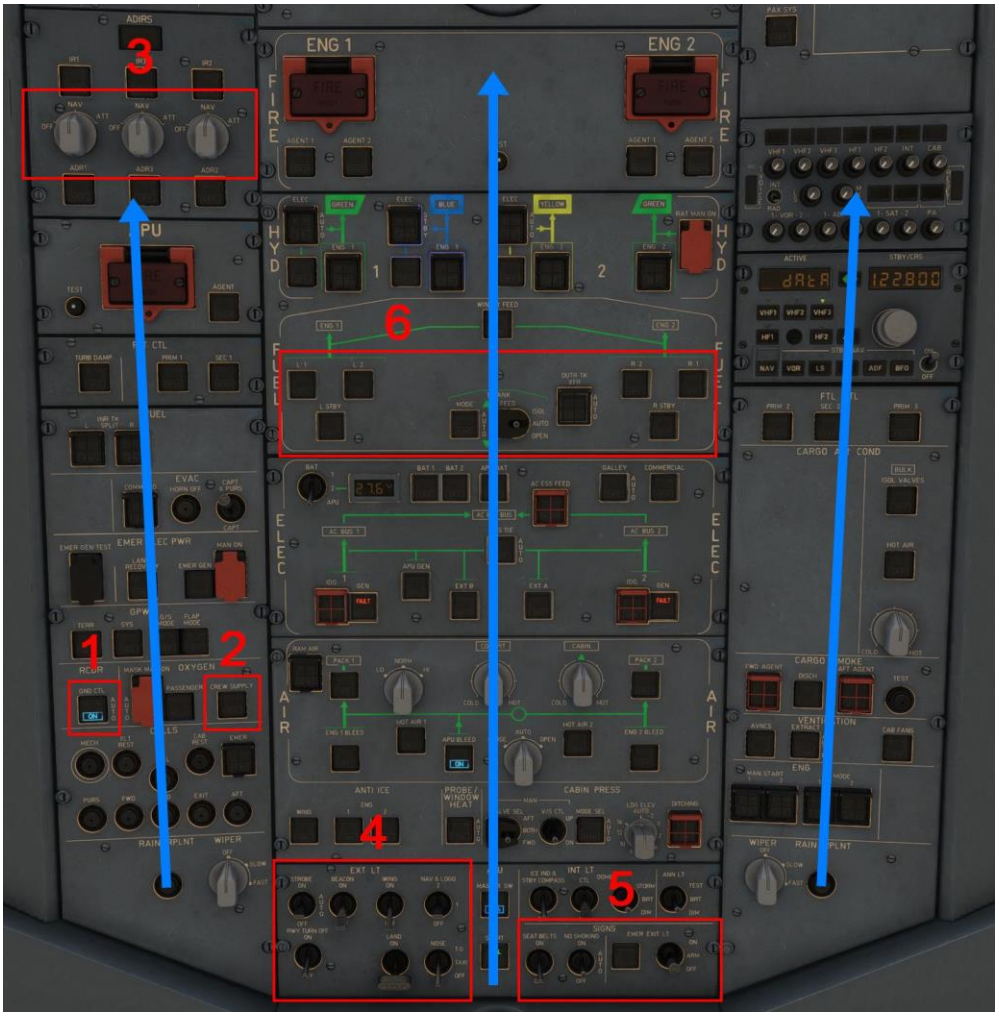
Cockpit Preparation

To properly configure the aircraft, you will use a series of cockpit 'flows' and scans. You can also use the in-sim checklist for guidance.

The scans normally start on the overhead panel using a bottom-to-top, left-to-right flow. Pay close attention to the following items to ensure that the aircraft is properly configured for departure.

Any white lights set to OFF should be turned ON during this flow.

1) The GND CTL push button should be selected ON
2) Crew Oxygen Supply ON (light out)
3) ADIRS selectors 1, 2 and 3 need to be in NAV
4) Exterior lighting panel should be set as follows:
    a. STROBE switch – AUTO
    b. BEACON switch – OFF
    c. WING switch - OFF
    d. NAV & LOGO switch – 1 (either 1 or 2 can be used)
    e. RWY TURN OFF switch – OFF
    f. LAND switches – OFF
    g. NOSE switch – OFF
5) Passenger signs panel should be set as follows:
    a. SEAT BELTS switch – ON/AUTO (once refueling has been completed)
    b. NO SMOKING switch – AUTO
    c. EMER EXIT LT switch – ARM
6) Fuel pump push button switches all On

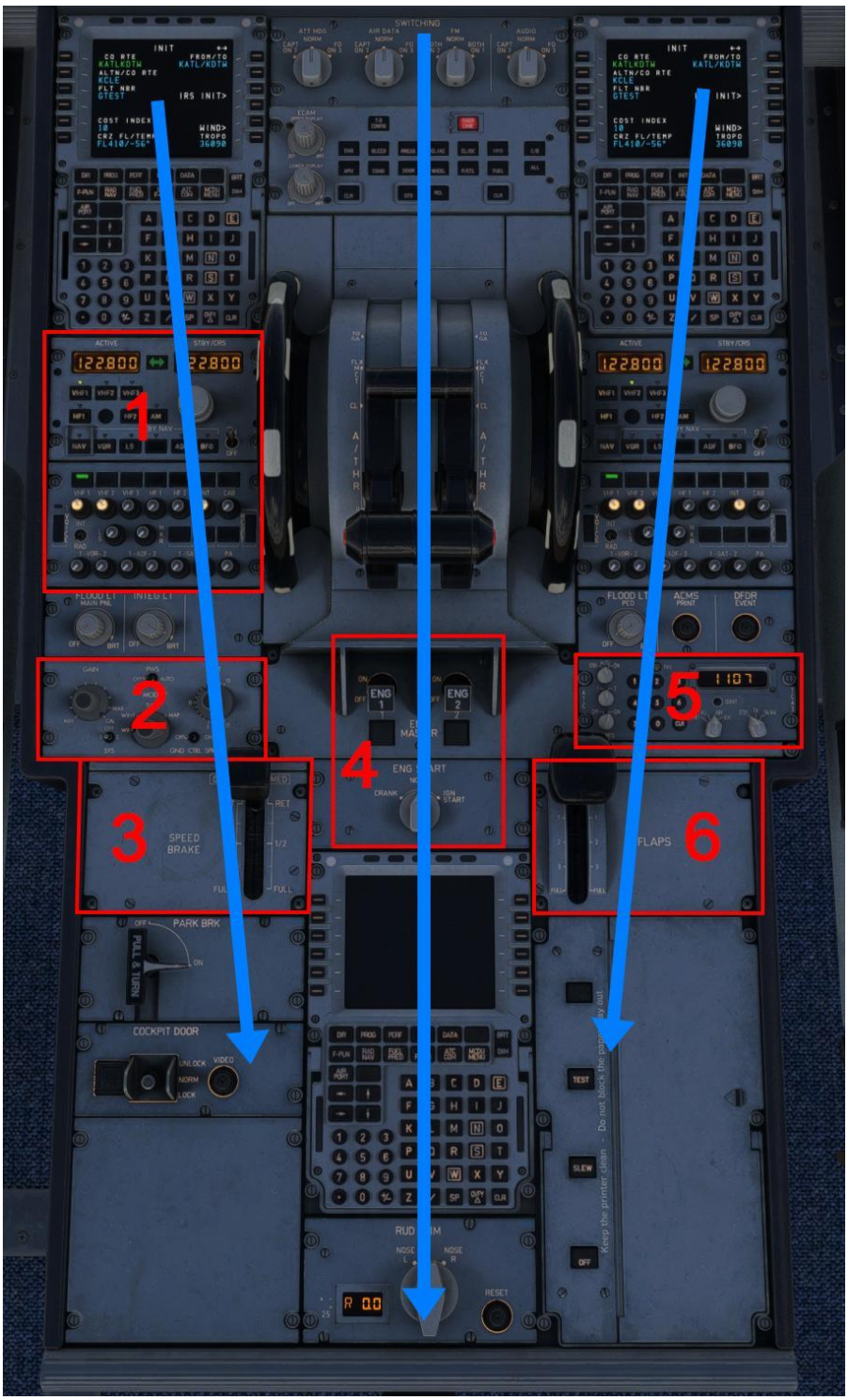

ADIRS
3
ENG 1
ENG 2
FIRE
APU
HYD
1
2
6
FUEL
ELEC
EVAC
EMER ELEC PWR
1
2
OXYGEN
AIR
ANTI ICE
CABIN PRESS
4
EXT LT
5
INT LT
WIPER
RAIN
CARGO
ENG

Center Instrument Panel

1) ISIS is ON and aligned, set QNH
2) Set the VOR/ADF bearing pointers as required
3) Clock is in GPS mode
4) Confirm landing gear lever DOWN
5) A/SKID & N/W STRG is ON

The Center Pedestal

1) Set radios to applicable frequencies and adjust volume knobs as required
2) Weather radar OFF, set the tilt and gain
3) Spoilers RET
4) Engine masters OFF and ENG START in NORM position
5) Transponder code set and OFF
6) Flap lever must match the flap position indicated in the E/WD



Now we will finish setting up the FMGES using the MCDU interface. Most of the information required will already be entered if using the Simbrief import function.

To enter the departure runway and Standard Instrument Departure (SID), press the F-PLN page (1) and press line select key L1 (2) to open the lateral revision (LAT REV) subpage.

Press line select key L1 again to enter the DEPARTURE runway and SID.

Using the up and down slew keys (1) you can scroll to see all applicable SIDs for the selected runway. Using the left line select keys (2) choose the SID. Some SIDs have various transitions, these can be selected with the right line select keys (3). If your transition is not visible you might need to use the up and down slew keys (1).

You can see above we have entered runway 08R and the PADGT2 departure, SMTTH transition at KATL (Atlanta). You can enter this directly to the flight plan by pressing the line select key R6 or review the input fully by pressing the F-PLN page key to return to the flight plan.

You can get a better view of the planned route on the ND by turning the EFIS control knob to PLAN and increasing the range. You should also select the CSTR (constraints) option to confirm the flight plan altitudes are entered correctly according to the appropriate chart.

Note – the FMGES has no weight information at this point so will draw straight lines between waypoints.

At this point you can also receive wind data from Simbrief and enter a secondary flight plan, usually used for an immediate return to the departure airfield, if required. Depending on the length of flight, the arrival can also be entered at this point, but for this demonstration you will leave as-is until you are in the cruise phase.

Most of the lateral and vertical navigation should now be set in the FMGS. The aircraft now needs to know the weight to calculate lateral and vertical performance. To do this, you will need to enter key values in the INIT B page.
Select the INIT page and slew right using the slew keys.
You can enter the ZFW, ZFWCG and BLOCK fuel figures manually or automatically.
To enter them automatically press right select line key 1 and 2. NOTE: loading and refueling must be complete for the figures to be accurately populated.

If you would like to manually insert the figures, start by inspecting the EFB.
The Zero Fuel Weight (1) and ZFWCG (2) to enter can be taken from the EFB Payload page.

The block fuel can also be taken from this page but is usually taken from the upper ECAM Fuel On Board (FOB) display.

You then need to calculate some safe takeoff performance criteria for the aircraft based on current airfield conditions and the aircraft payload. This can be done using the EFB Takeoff page (1).

Pressing the Sync (2) button will sync the airfield live weather data from the sim and the aircraft weight. You may need to adjust the takeoff runway and aircraft configuration in certain circumstances.

Once all the data is entered, you can press Calculate (3) to view the performance figures. If satisfied with the output these can be sent directly to the FMGS by pressing the Send to FMGS button (4).

Note on the MCDU PERF page that the takeoff speeds are now ready to be inserted (1). To confirm the takeoff data (2), press line select key R6. This will also populate the FLEX TO TEMP (3) and you FLAPS/THS (4).

You would normally cross check the data entered from the EFB.

This concludes the minimum MCDU configuration requirements. Configure the autopilot (FCU) as the final step of the MFGES and cockpit preflight preparation process.

Check that the altimeter pressure setting (1) is correctly set on the FCU (you can press the default key command 'B' to set the correct pressure).

The Flight Directors (FD) (2) are required to be 'On' for both Captain and FO sides. They should be turned 'On' by default during the initialization process.

Set your EFIS display options as you prefer (3).

The Speed (SPD) and Lateral Navigation (LAT) should both be automatically set in Managed Mode (4). If they are not, pushing the relevant control selector knob underneath the display will activate them.

The FCU should be in Heading and Vertical Speed (HDG V/S) mode (5).

Set your first assigned altitude using the altitude selector knob (6). This is normally indicated on the SID chart or given by ATC. For the purpose of this flight, we will set this to our cruise altitude. The aircraft will respect altitude constraints in the FMGS flight plan if entered correctly.

Armed and Active modes are cross checked on the Primary Flight Display (PFD).

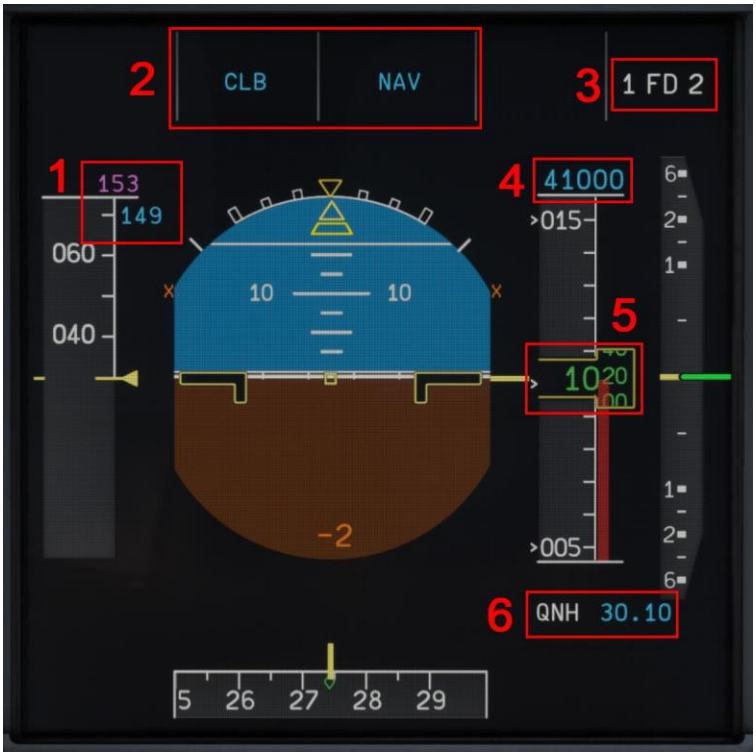
The Decision (V1) and Initial Climb Speed (V2) are displayed on the speed tape (1).

The vertical and lateral flight direct and autopilot modes are armed (blue) on the Flight Mode Annunciator (FMA) (2).

Both Flight Directors are 'On' (3).

The FCU altitude is set to our initial altitude (4).

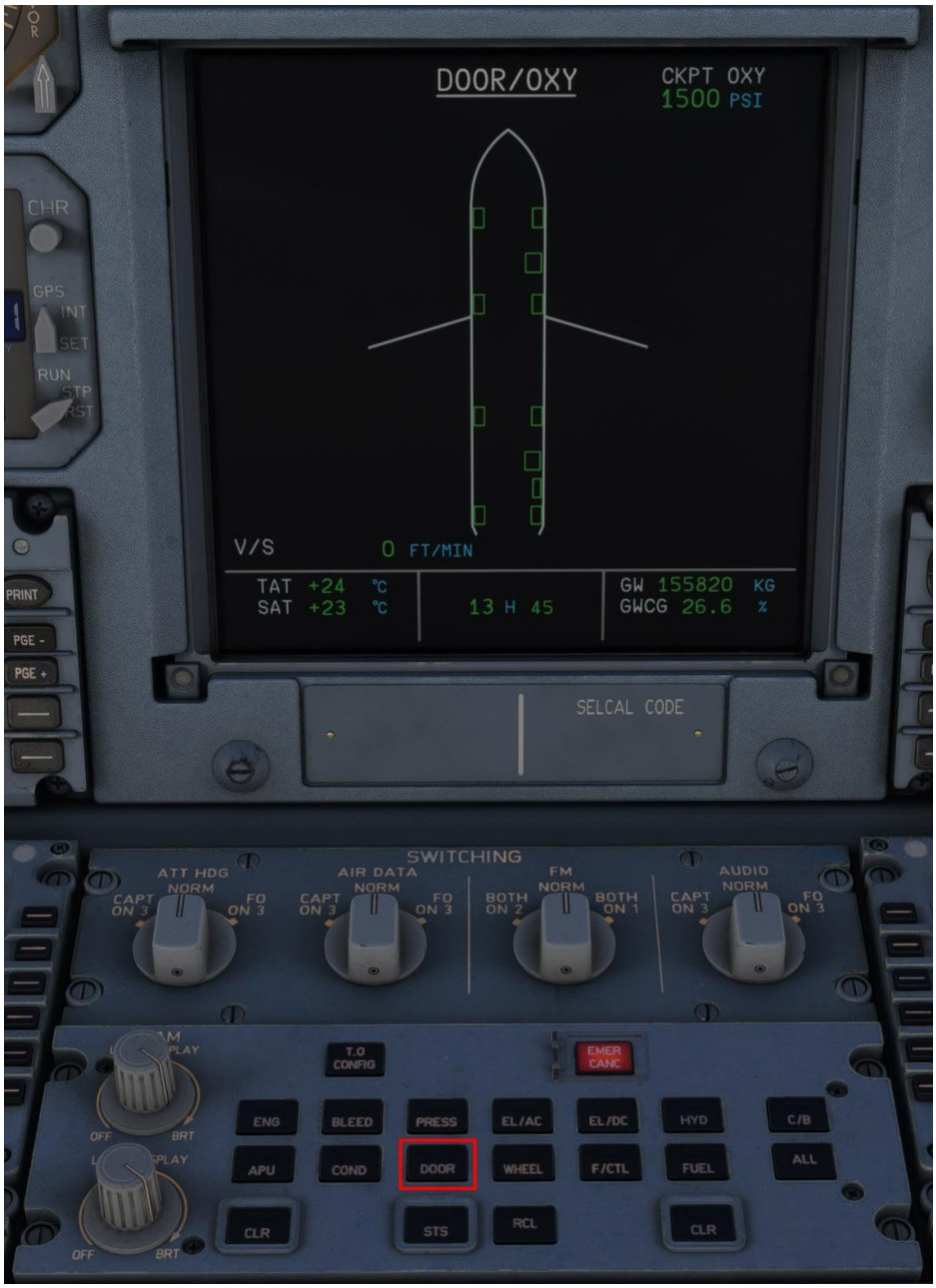
The aircraft's current altitude (5) is correct according to relevant data on the currently selected pressure setting (6).



Before Engine Start

Prior to progressing to the next phase, ensure that loading is complete and the aircraft is ready for pushback and engine start.
Press the EFB Ground Page and select Close All. You should also remove the GPU and Chocks if not already completed.

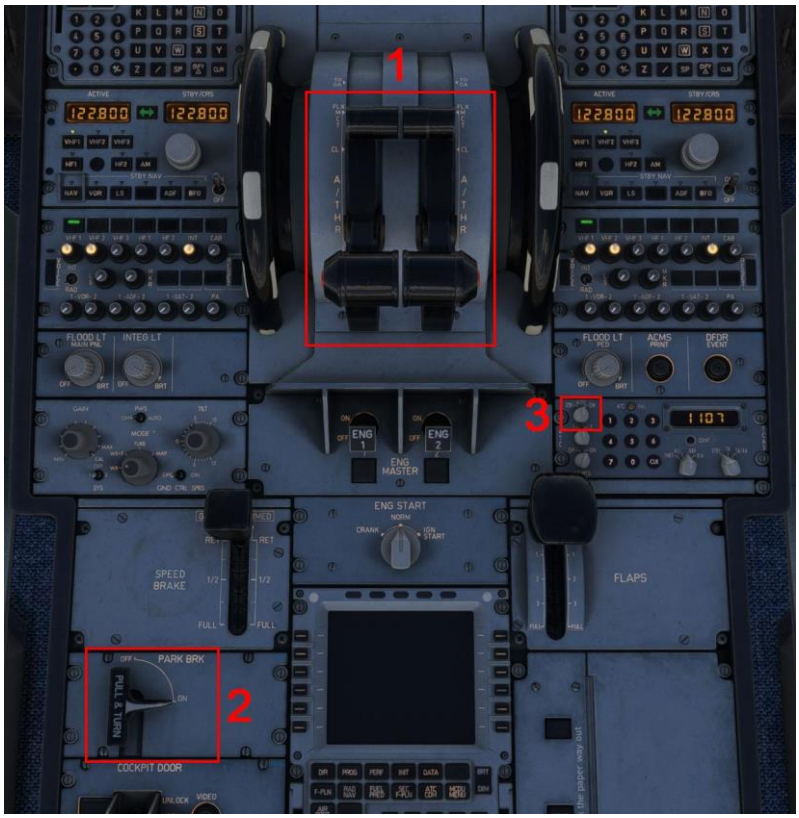
You can confirm the status of the doors from the cockpit by viewing the lower ECAM display. This should normally be on the DOOR/OXY page after initialization but can be selected by pressing the ECAM control DOOR button.



Once all exits and cargo compartments are closed, call ATC for pushback and start-up clearance.

Turn the BEACON light to ON.

1) The thrust levers are on idle
2) Parking brake is set to ON
3) Set the transponder to AUTO

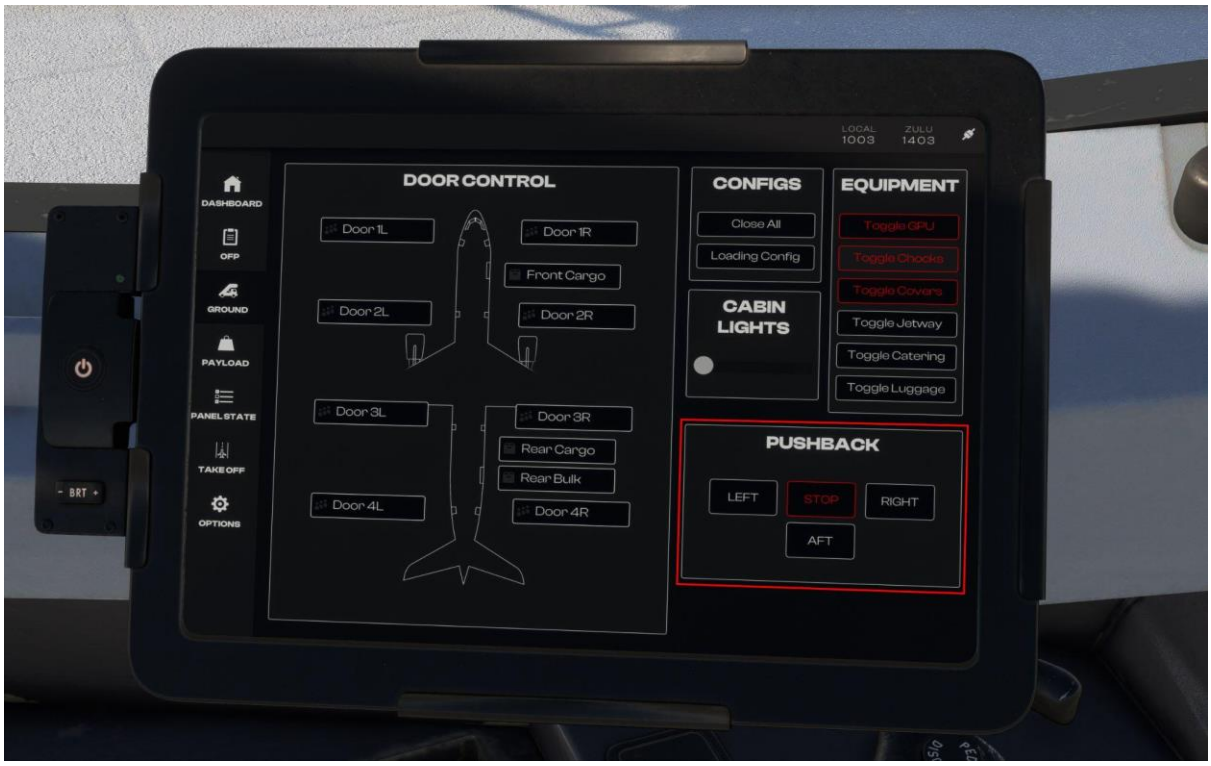


Pushback and Engine Start

The pushback can be initiated using the in-sim ATC menu or the EFB control.

To start a pushback, use the Left, Right, and Aft buttons to set the pushback direction. Release the parking brake to begin the procedure.

Once you reach the desired point on the taxiway, the pushback can be stopped by pressing the STOP button. The pushback tug will automatically disconnect.



You can start the engines while the pushback is underway. Ensure the APU is Available (AVAIL) (1) and the APU Bleed is ON (2).

The Airbus A330 procedurally starts Engine 1 first to power the (blue) hydraulic system, which in turn pressurizes the accumulator that feeds the brake system.

Turn the Engine Mode Selector to IGN/START (1) and then turn Engine Master Switch to ON (2).

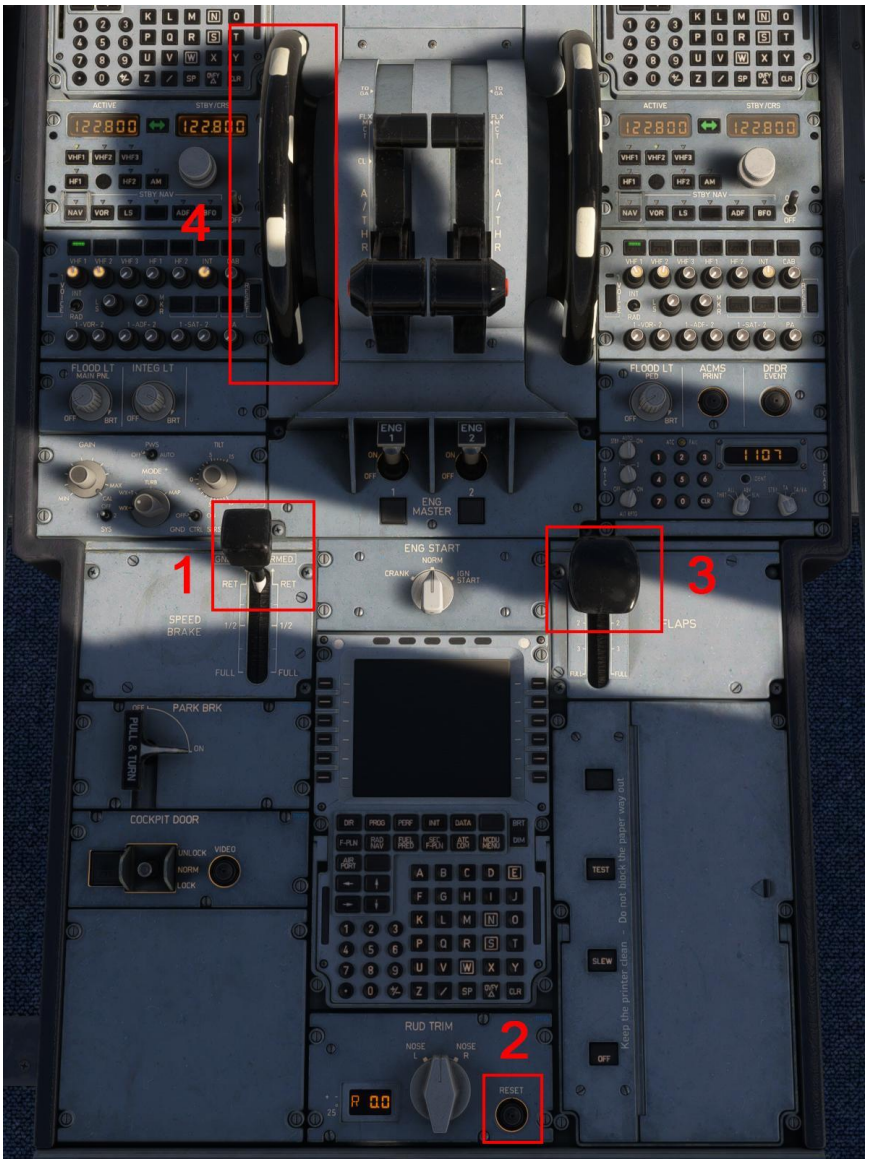
Once the startup is successfully completed by the FADEC, an AVAIL indication is shown temporarily on the ECAM Engine Warning Display (EWD).

The procedure for starting Engine 2 is identical to that of Engine 1.

After Engine Start

After the start sequence is complete for both engines and the pushback tug has disconnected from the aircraft, conduct the next procedure flow.

1) Turn the Engine Mode selector to NORM.
2) Turn the APU Bleed OFF and then the APU Master switch OFF.
3) Arm the Ground Spoilers (1) by pulling the control upward.
4) Reset the rudder trim to zero (2).
5) Set the Flaps (3) to the required takeoff setting; in this scenario Flaps 1.
6) Confirm that the trim value has been correctly set to the value displayed in the MCDU PERF TO page (4). This setting is done automatically only once and can be adjusted by the pilot.



The aircraft is now ready to taxi under its own power.

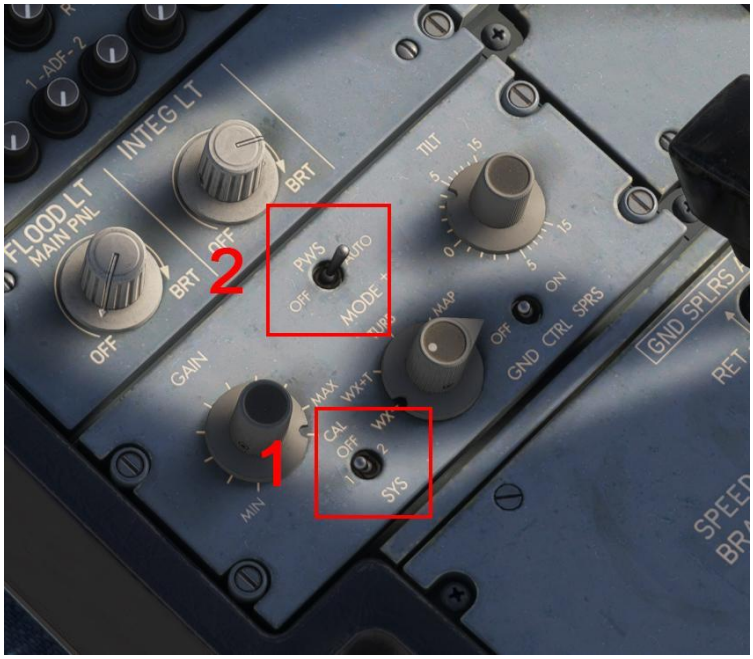
Taxi Out

The following set of flows are typically completed during the taxi phase of operation, but should be conducted now. Once you become more accustomed to these procedures, you will be able to undertake them while the aircraft is in motion.

Begin by checking flight controls. Smoothly apply and hold full deflection of your joystick and identify corresponding inputs in the SD. Note that you do not need to select the F/CTL page; the F/CTL page will automatically display once you apply a joystick input. Full-up elevator input is shown below.

Set the Auto Brake to MAX when the control check is complete.

Turn the Weather Radar ON by selecting System 1 or 2 (1) and turn the Predictive Windshear System to AUTO (2)



Check that the T.O. Memo has no blue items (1). Cabin Ready may still be blue in some instances. You can force this to the 'Ready' requirement by pressing the FWD CALL on the overhead panel.

Once all the criteria are fulfilled, you can press the TO CONFIG test (2) push button on the ECAM control panel to complete the test.

Set the Nose Light to TAXI and RWY TURN OFF to ON; this will indicate to aircraft and vehicles around you that the aircraft is about to move under its own power.

You can now begin the taxi to the runway for departure. This is normally done using the tiller located on the side console. For simulation purposes this is linked to the rudder pedals for easier use.
Releasing the parking brake and leaving the engines at idle is usually sufficient to get the aircraft rolling; at heavier weights, a slight increase in thrust may be required. This should be limited to a maximum of 40% N1.

Taxi to the active runway using the minimum thrust required while keeping your speed below 30 kts. This can be monitored with the Ground Speed (GS) indication on the top left of the Navigation Display (ND). The preferred method is to allow speed to build to 30 kts then apply one smooth brake application to slow the aircraft to around 5 to 10 kts. This avoids applying constant brake

pressure which will cause them to overheat prior to departure. Keep a speed of 10 kts on 90 degree turns.

Apply the parking brake when holding short of the departure runway.

Before Takeoff

Once ATC has issued takeoff clearance, perform the following flow to ensure that the aircraft is prepared for departure. For ease, complete this while the aircraft is stationary.

1) Exterior lighting panel should be set as follows:
    a. STROBE switch – ON
    b. LAND switch – ON
    c. NOSE switch – TO

2) ATC Transponder and Traffic Collision Avoidance System (TCAS)
    a. ATC Mode – AUTO/ON
    b. TCAS Selector – TA/RA

Depending on aircraft performance and external conditions, you would now normally confirm the status of the Air Conditioning PACKS and Engine Ignition mode. For this flight it is not required.

Takeoff

We suggest you read through these next steps a few times before attempting the takeoff, as with any aircraft the takeoff and initial climb phase progress in quick succession, and it is easy to 'get behind' the aircraft. Line up with the runway and apply the parking brake initially (you would not do this for normal operations).

The A330 thrust management is conducted by the FADEC and FMGES. There are two main settings for takeoff: Takeoff and Go-Around (TOGA) or FLEX. TOGA will provide maximum available thrust to the engines whereas FLEX effectively derates the engines to provide less power but increase engine life.

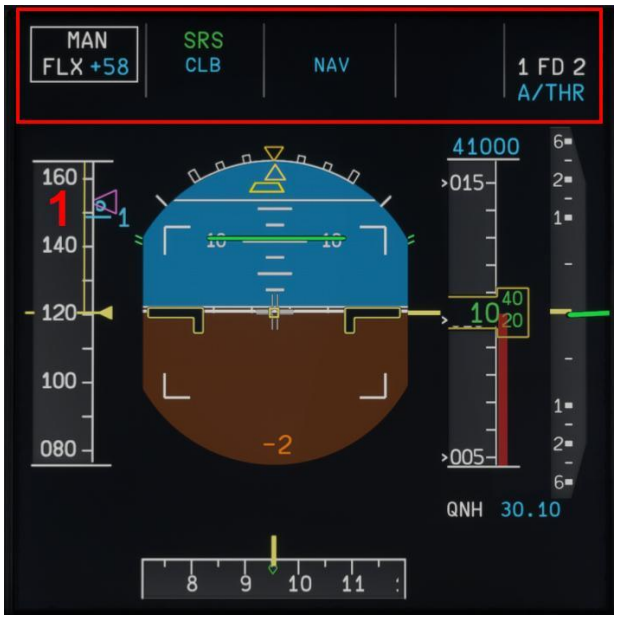
Note - To make use of the FLEX setting you must enter a FLEX temperature value in the MCDU Performance page.

The throttles have detents and audible clicks for each phase. For FLEX takeoff you will move forward two detents/clicks, for TOGA you would move the throttles fully forward (or 3 detents/clicks).

Hold the side stick approximately half travel forward, this ensures the nosewheel remains in contact with the ground and nose wheel steering can be maintained during acceleration. Now release the parking brake. The aircraft will accelerate quickly! Maintain the runway centerline using the rudder pedals to steer. The fly-by-wire system will gradually blend nosewheel steering to the rudder only.

You will notice some annunciators appear on the PFD indicating that elements of the FMGS and AP are active or arming. Notably the thrust mode is in FLEX and the vertical guidance is in Speed Reference System (SRS) Mode. The lateral navigation mode Runway (RWY) is only present if the takeoff runway has an ILS associated with it. Finally the auto thrust (A/THR) is armed. Climb and Navigation modes are currently still armed, ready for the acceleration phase.

While accelerating, gradually release the forward stick pressure to a neutral point by 100 kts. Shortly after you will reach V1 (first speed indicated in blue (1)), your decision speed. Barring any major technical issues, you will continue the takeoff. At VR (the blue circle on the speed tape (1)) we will gradually initiate the rotation by pulling back on the stick gently. We are aiming for an initial climb attitude of 15 degrees within about 5 seconds. The Flight Directors will guide you to the correct attitude. You can now engage Autopilot 1 (AP1).

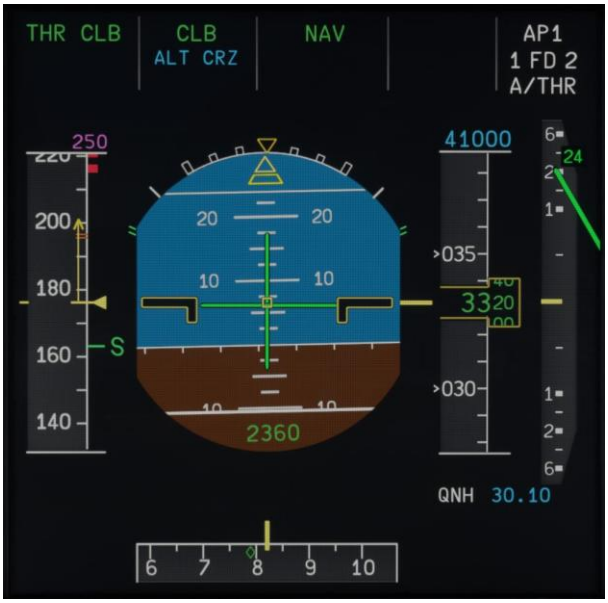


Once airborne with the aircraft positively climbing, raise the landing gear by selecting the Landing Gear Lever to the UP position. Confirmation the gear is moving will be indicated by the LDG GEAR position lights turning to the red UNLK position.

The next phase of the takeoff will accelerate the aircraft to its clean configuration and climb speed, normally 250 kts below 10,000 ft. The acceleration segment will normally happen between 1,000 and 1,500 ft above ground level. This can be set to automatically populate in the MCDU PERF page via the EFB. The Autopilot will automatically pitch down to achieve this acceleration. You will also note another change in the FMA ordering the thrust levers to be set to Climb power (LVR CLB) and flashing white. Vertical CLB and lateral NAV modes are now fully engaged (indicated in Green).

As the aircraft accelerates, an S or F (depending on takeoff flaps setting) will appear from the top of the speed tape on the PFD. Shortly thereafter, a red and black “barber’s pole” will indicate a maximum flight envelope speed, in this case our maximum Flaps speed in this configuration. The active speed mode will now be in Thrust Climb (THR CLB).

When accelerating above the S speed, raise the flaps by setting the Flap Lever to 0.



You can now complete the initial part of your climb check flow.

1) Disarm the speed brakes by pushing the lever in. Be careful not to deploy speed brakes, the aircraft will provide a warning if you do this.
2) Set the lights to the following:
    a. NOSE – OFF
    b. RWY TURN OFF – OFF

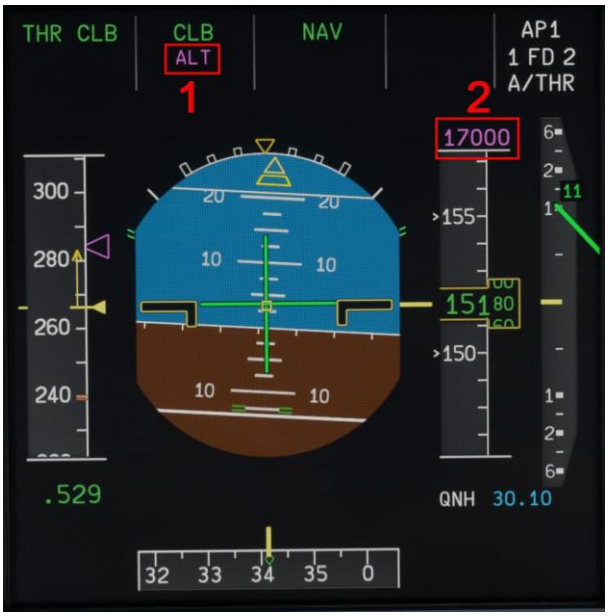
Now the aircraft is safely climbing to its cruise flight level.

Climb

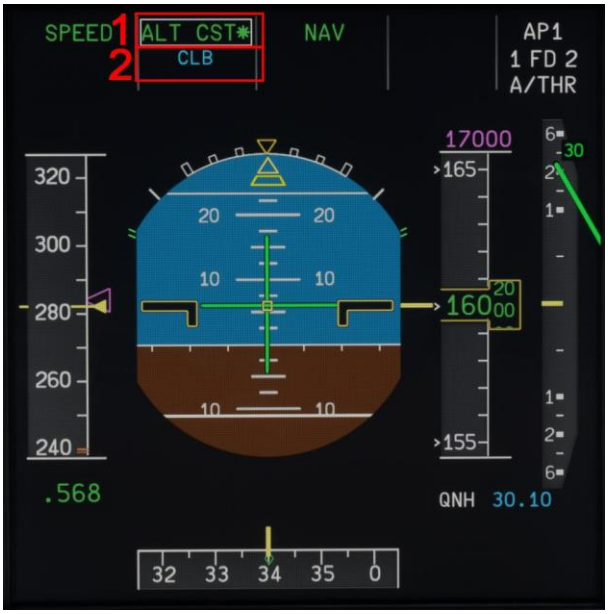
You may sometimes be on a Standard Instrument Departure (SID) that has specific climb restrictions. The autopilot will temporarily stop the aircraft from climbing due to this restriction as long as you are in managed climb mode (CLB). This will be evident from a magenta altitude constraint on the PFD altitude tape and the FMA indicating Altitude Constraint (ALT CST) mode.

Landing lights will be turned off above 10,000 ft and the passenger seat belt sign can also be set to Auto.

For demonstration purposes an altitude constraint of 17,000 ft has been entered at a waypoint. ALT has changed to magenta to indicate a level off will take place at a constraint (1). Even though the FCU altitude target is still set as 41,000 ft, the target value has changed to the constraint, 17,000 ft (2)



The aircraft is now leveling off, note that ALT CST* has engaged (1) and that CLB is armed (2) (blue color). This indicates that after the waypoint with the constraint is sequenced Climb will engage automatically and continue the climb without pilot intervention



The waypoint has now been sequenced, Climb mode has re-engaged and the altitude capture mode is back to our cruise level, ALT CRZ, matching the value set in the FCU (1).
Above the altitude tape the level off target altitude is back in blue (2)

Note: You can however override this automatic level off and continue a constant climb to your selected cruise altitude. To do this you would pull the altitude knob to 'take' control from the autopilot.

The aircraft will enter an Open Climb (OP CLB) as indicated by the FMA on the PFD. Once past the constraint you can 'give' back control to the autopilot by pushing the same selector.

The aircraft will now continue to the top of climb without any further interaction. You do, however, need to clean up the external lights and ensure the correct pressure setting is set.

Set Standard (STD) pressure (1013 hPa or 29.92 inHg) by pulling the baro selector knob when above the transition altitude.

Cruise

Few pilot actions need to be performed during the cruise phase of the flight other than monitoring the aircraft systems and tactically managing the guidance system. For demonstration / educational purposes, explore some of the functions:

You can use the MCDU to give the FMGES a waypoint to fly-to directly. These are effectively short cuts given by ATC to save time and fuel. The procedure is simple after some practice.

1) Select the Direct To (DIR) page on the MCDU (1).
2) Use the slew keys (2) up and down to find the desired waypoint. In our example this is CEMEX.
3) Press the line select key (3) next to CEMEX to enter it into the DIR TO.
4) Activate the DIR TO by pressing line select key L1 (4).

The aircraft will turn towards CEMEX automatically. You can confirm that the aircraft is navigating to the correct point by checking the TO waypoint on the ND.

Approach Preparation

As with departure, you will need to prepare the FMGES for the arrival procedure into Detroit. This will provide the flight directors and autopilot with the information required to successfully guide the aircraft to the runway.
For this arrival you will follow a Standard Arrival Route (STAR) followed by a conventional Instrument Landing System (ILS) approach. You will execute a fully automatic landing using the autopilot. This is usually reserved for low visibility operations, and you can, of course, manually fly the landing if you desire.

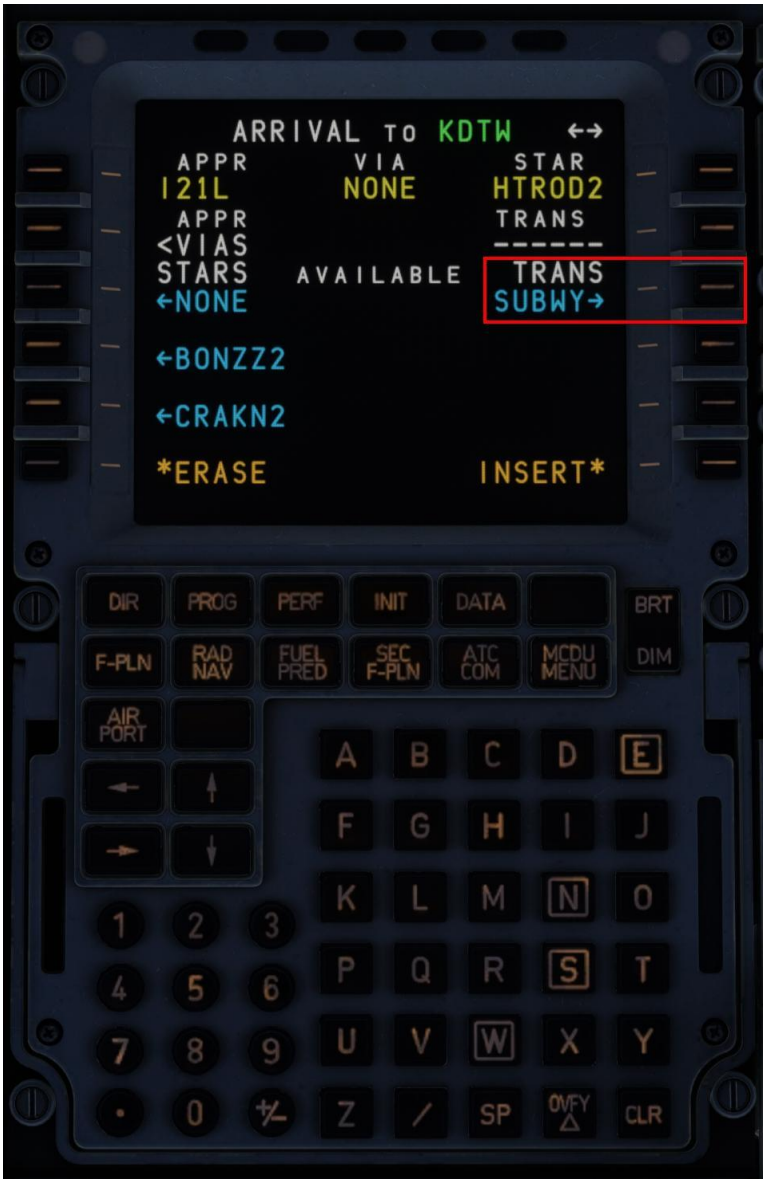
To start preparing the FMGS press F-PLN page to ensure you are on the active route, and press line select key L6 next to KDTW.

Press line select key R1 to select the arrivals page.

And then press line select key L4 to select the ILS for Runway 21L.

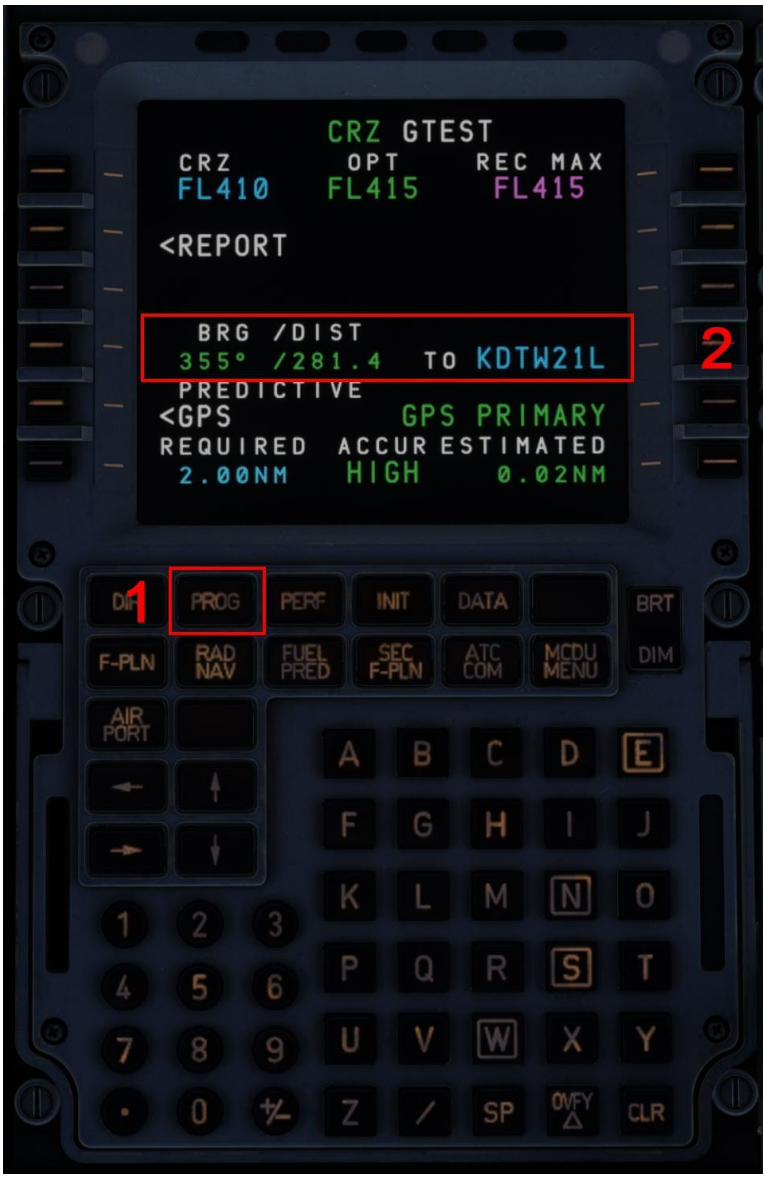
Scroll down using the slew keys until you find the HTROD2 arrival, press the relevant line select key, in this case it is L5.

Now select the SUBWY transition by pressing R3. Press INSERT* at line select key R6 to insert the STAR and ILS approach.



You can check that the navigation data, in particular the ILS course and frequency, has been entered correctly by pressing the MCDU RAD NAV page button.
Note – the ILS/FREQ and (ILS) CRS is only auto populated in the MCDU when the aircraft has less than 300 NM to go.

To give us an idea of track mileage and direction to the airport we can enter a waypoint to give a constant bearing and distance. This is done by pressing the MCDU PROG (1) page button, entering the desired waypoint in the scratchpad, and then pressing line select key R4 (2).



Next, to help the FMGES vertical guidance path and estimations, you will insert the arrival airfield information in the MCDU PERF page (1). Cycle through the available Next Phase pages using line select key R6 until you reach the APPR (3) page.
Enter the information required at line select L1 to 3 by entering it into the MCDU scratchpad and then pressing the requisite line select key. This information can be found on the EFB Flight Details page. Pressing the Update Button will provide the most recent live weather.

Insert all the weather information as per the ATIS/METAR and the decision altitude in the BARO field. If you are doing a CAT II or CAT III approach you will be inserting a decision height in the RADIO field.

With all the PERF data entered, your page should look similar to the following:

You should also consider the length of runway available and how you are going to stop the aircraft after touching down. The aircraft uses a combination of deceleration devices including spoilers, thrust reversers, and wheel brakes to decelerate. Detroit is a large international airport with long runways so you can safely use a low autobrake setting. Press the Auto Brake LO button.

You should be approaching the top of descent at this point, indicated by the small white arrow along the flight plan lateral path.

Descent

You can initiate a descent once the aircraft is within a few nautical miles of the descent arrow. The FMGS requires two parameters to commence the descent:

1) An altitude target
2) Descent profile

Normally, ATC dictates descents as a series of 'step downs', but for the purpose of this guide, you will set your final approach fix altitude. For the ILS21L, this is 2,000 ft.

Set the FCU altitude to 2,000 ft.

To begin the aircraft's descent, push the knob to enter managed descent mode.

The PFD will display the following:

Waypoint BUCKN in the STAR has an altitude window, it has to be passed between FL240 and FL270. ALT is magenta and the target altitude is FL240, this indicates that the aircraft will level off at FL240 to satisfy the altitude constraint.

A constraint with a + indicates that you must remain above the level, a constraint with a – indicates that you must remain below the level, and a constraint with just a level indicates you should pass that waypoint at that level exactly.

Set QNH by pressing the baro selector knob when below the transition level.

When descending through 10,000 feet, set the landing switches to ON and the seat belt signs to ON. The autopilot should automatically reduce speed to 250 kts. Select the Landing System (LS) push buttons to ON to provide pilot and autopilot guidance.

If you find the aircraft is too high above the desired descent trajectory, indicated by a small green dot gradually moving below the current altitude, you can apply speed brakes. Set them to half initially to see if this reduces the error.

Approach

We will arm the approach by first pressing the APPR button (1) when we are on an intercept heading for the ILS. After pressing APPR select the other autopilot as well (2).

You should also activate the approach phase by pressing line select key L6. The FMGS will automatically initiate this phase when flying over the approach deceleration point indicated by a magenta D on the flight plan.

The FMA will display several items of information. During the approach, focus primarily on lateral and vertical modes having armed and captured the ILS.
Also note that the aircraft has indicated that it has a Category (CAT) 3 Dual approach capability, meaning that it can fully Autoland.
The ILS identifier, frequency, and distance to go (DME) is indicated on the lower-left of the PFD.
The localizer and glide slope deviation bars indicate vertical and lateral track referenced against the ILS ground signal.
Currently, the Localizer is being tracked (LOC green) and the Glide Slope is armed (G/S blue).

Prior to intercepting the final approach slope, begin decelerating the aircraft to its final approach speed. You need to consider two speeds as the aircraft decelerates through the approach phases. The VFE Next, indicated by orange stripes, and the current minimum speed, based on the aircraft's configuration. The aircraft's speed must be below VFE Next to avoid an overspeed situation.

1) Vfe next (=) will change as we extend the flaps

2) The minimum speed will depend on the configuration
    a) (o) Green dot: minimum speed clean
    b) (S) S-Speed: minimum speed CONF1
    c) (F) F-Speed: minimum speed CONF2 & 3

After Flaps 2, select the gear down, which will contribute to the aircraft's deceleration while descending along the glide path. Arm the spoilers by pulling on the speed brake lever.

Once below 2,000 ft and in landing configuration, the landing memo will be displayed to confirm that the aircraft is ready for landing.

The aircraft will now complete an automatic landing and rollout, bringing the aircraft to a complete stop. You will be prompted at approximately 20 ft to 'Retard' the throttles; move the throttle controls to the idle position or press F1 on your keyboard. Once the main wheels have contacted the runway you can select reverse thrust by pressing F2, or if calibrated via the EFB, the reverse thrust range on your throttles. Cancel reverse thrust at approximately 60-70 kts by pressing F1 again or returning your throttles to idle. The aircraft will automatically complete the process and bring you to a complete stop on the runway.

If you want to intervene before reaching a complete stop, disconnect the autopilot by pressing the button on the side stick (1) or in your joystick. You will also need to press the brakes to manually take control of braking again.

Congratulations! You have completed the flight. You may now taxi the aircraft to an available parking stand and follow the in-sim checklist to shut down and secure the aircraft, or use the following simplified procedural checklist:

System Differences

The walk-through flight was accomplished using the A330-300 passenger variant with Rolls-Royce engines. In this section we will discuss only what is different between this and the other modeled variants.

The following variants are available in your simulator:

- Passenger
    - A330-200 GE engines
    - A330-200 RR engines
    - A330-300 GE engines
    - A330-300 RR engines

- Passenger to Freighter (P2F)
    - A330-300 GE engines
    - A330-300 RR engines

General information

Two primary differences distinguish the A330-200 from the A330-300: 1) length: The A330-200 has a shortened fuselage (58.37 meters / 191 feet, 3 inches) compared to the A330-300 (63.69 meters / 208 feet, 11 inches). 2) height: The A330-200 comprises a taller fin and rudder than the A330-300 to counter the reduced yaw moment due to shortened fuselage length.

Passenger to Freighter (P2F)

The A330-300P2F freighter variant has no passenger cabin and comprises notable fuselage modifications: Only the foremost two doors function, and a new Upper Cargo Door has been fitted on the main cargo deck for loading and unloading.

Engines

iniBuilds has modeled two engine variants for the A330, the Rolls-Royce (RR) Trent 700 and the General Electric (GE) CF6, both high-bypass turbofans. Each engine type generates a similar level of thrust and we enable the operator to decide which to use.
The General Electric CF6 is a double-spool engine, meaning that it comprises a low-pressure compressor-turbine combination (N1) and a high-pressure compressor-turbine (N2). The Rolls-Royce Trent 700 is a three-spool engine. It comprises a low-, medium-, and high-pressure compressor-turbine (N1, N2, and N3).
General Electric and Rolls-Royce each use their own specific parameters to control thrust setting.
General Electric uses N1 as a percentage, while Rolls-Royce uses Engine Pressure Ratio (EPR), the ratio of engine intake to exit pressure.
The primary difference that the pilot will note is the Engine Warning Display (E/WD) and on the ENG page of the System / Status Display (SD).

Engine Warning Display

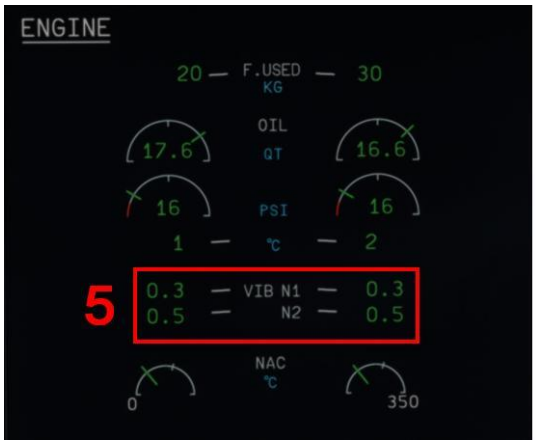
GE

RR

1) Note that N1 (as a percentage) is the primary engine indication for the General Electric CF6 and EPR (as a ratio) is the primary engine indication for the Rolls-Royce Trent 700.
2) GE engines display the N2 percentage.
3) RR engines display the N1 and N3 percentage in the EWD display. N2 is displayed in the ENG SD page.

System/Status Display

GE



RR

4) N2 is displayed here for the RR engines.

5) RR engines have an extra vibration indication for the third (N3) spool.

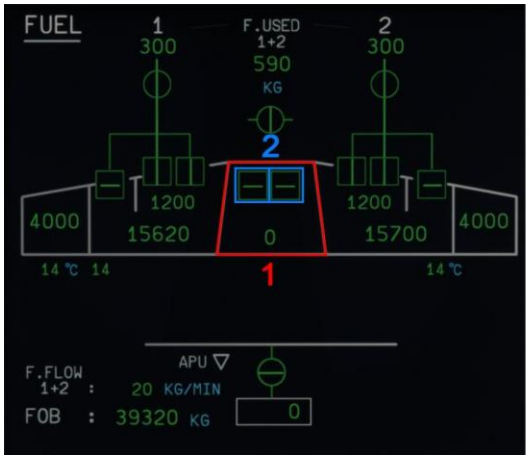
Fuel system

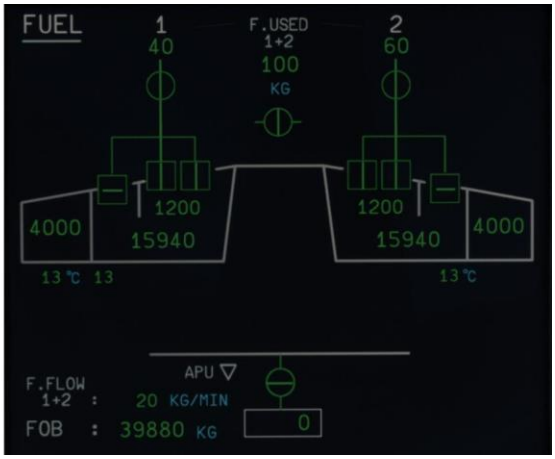
While the A330-200 and A330-300 each have two fuel tanks per wing and one tank in the Trimmable Horizontal Stabilizer, the A330-200 has an additional tank in the center section of the fuselage between its wings. The center tank of the A330-200 increases the fuel capacity by an additional 32,625 Kg (71,926 Lbs) and provides the aircraft with an impressive range of just over 15,000 km (8,100 nmi).

A330-200 A330-300

Overhead Panel

Fuel SD Page





1) Center tank
2) Center tank pumps

Simplified Procedures

Preliminary Cockpit Preparation	
Engine Master 1&2	OFF
Engine Start Selector	NORM
WEATHER RADAR	
Radar (SYS)	OFF
Predictive Windshear (PWS)	OFF
Gain Knob	AS REQD
Mode Selector	AS REQD
Landing Gear Lever	DOWN
Wiper Selectors	BOTH OFF
Battery 1, 2 & APU	CHECK VOLTAGE
External Power A & B	ON & AUTO
APU Fire	CHECK
APU Agent Light	OFF
APU Fire Test	PRESS AND HOLD
APU START	
APU Master Switch	ON
APU Start	PRESS
Monitor APU Start	WAIT
External Power A & B	AS REQD
AIR CONDITIONING PANEL	
APU Bleed	ON
All White Lights	OFF

X-BLEED	AUTO
Cockpit and Cabin Temperatures	AS REQD
CARGO AIR CONDITIONING PANEL	
Temperature	AS REQD
All Cargo White Lights	OFF
Cockpit Lights	AS REQD
EFB	ON
FMGS PRE-INITIALIZATION	
Engine and Aircraft Type	CHECK
Database Validity	CHECK
Flight Number	INSERT
FROM/TO	INSERT OR REQUEST (SIMBRIEF)
PRELIMINARY PERFORMANCE	
Airfield Data	OBTAIN
Weight and Balance Data	INSERT
Preliminary Takeoff Performance	COMPUTE ON EFB
ECAM PAGES	
DOOR SD Page	CHECK
HYD SD Page	CHECK
ENG SD Page	CHECK
Flaps	CHECK
Speed Brake Lever	CHECK
ACCU Pressure Indicator	CHECK

Park Brake Handle	CHECK
Brakes Pressure Indicator	CHECK
ALTERNATE BRAKING SYSTEM	
Chocks	CHECK
Park Brake Handle	OFF
Brake Pedals	PRESS
Brake And Accumulator Pressure Indicator	CHECK
Brake Pedals	RELEASE
Park Brake Handle	ON
Emergency Equipment	CHECK
Landing Gear Pins and Covers	CHECK

Cockpit Preparation	
All White Lights OFF	CHECK
RCDR GND CTL	ON
Evac CPT and PURS/CPT Switch	AS REQD
ADIRS All IR Mode	NAV
EXTERIOR LIGHTS	
Strobe	AUTO
Beacon	OFF
Wing	OFF
NAV & Logo	LT1
RWY Turn Off	OFF
Landing light	OFF
Nose	OFF

Seat Belts	ON
No Smoking	AUTO
Emer Exit Light	ARM
Probe/Window Heat	AUTO
Landing Elevation	AUTO
Manual Valve Set	BOTH
Pack Flow	AS REQD
BATTERY CHARGE CYCLE	
ELEC SD Page	PRESS
Battery 1, 2 & APU Battery	OFF THEN ON
ELEC SD Page	CHECK
Trim Tank Mode	AUTO
Trim Tank Feed	AUTO
Fuel Pumps	ON
Engine 1&2 Fire	CHECK
Agent 1&2 Lights	OFF
ENG Test	PRESS AND HOLD
Maintenance Panel	CHECK
Vent Panel	CHECK
COM 3	RECEPT
ISIS CHECK	
Brightness	ADJUST
IAS, ALT Readings	CHECK
Attitude	CHECK

North Ref	OFF
DMC Selector	AUTO
ECAM ND Selector	NORM
Clock	SET
LDG Gear Gravity Extn Selector	OFF
A/Skid & N/W Steering Switch	ON
CPT & FO RADIO MGMT PANEL (RMP)	
CPT RMP	ON
CPT Green Nav Light	OFF
CPT SEL Light	OFF
CPT Comm Frequencies	TUNE
FO RMP	ON
FO Green Nav Light	OFF
FO SEL Light	OFF
FO Comm Frequencies	TUNE
CPT & FO AUDIO CONTROL PANEL (ACP)	
CPT INT Knob	CHECK
CPT VHF Knob	CHECK
FO INT Knob	CHECK
FO VHF Knob	CHECK
ACCU PRESS Indicator	CHECK
Park Brake Handle	ON
Brake PRESS Indicator	CHECK
Cockpit Door	CHECK

Switching Panel	NORM
Thrust Lever	IDLE
Thrust Reverser Lever	STOWED
Engine Master Switch	OFF
Engine Start Selector	NORM
ATC Mode Selector	STBY
ALT RPTG	ON
XPDR Selector	SYS 1
NAV Charts	PREPARE
FMGS PREPARATION	
INIT Key	PRESS
FROM/TO	CHECK OR REQUEST
ALTN	CHECK OR MODIFY
Flight Number	CHECK OR ENTER
Cost Index	ENTER
CRZ FL	ENTER
CRZ FL Temp	CHECK
FLIGHT PLAN (PAGE:A)	
Departure Airfield	PRESS
Departure Information	SELECT
INSERT	PRESS
Route as Required	CHECK OR ENTER
INSERT	PRESS
Arrival Airfield	PRESS
Arrival Information	SELECT
INSERT	PRESS
Winds	AS REQD

Secondary Flight Plan	AS REQD
Radio NAV	CHECK / SET
Calculate Weight / Perf	ON EFB
GROSS WEIGHT INSERTION (PAGE: INIT B)	
ZFW/ZFWCG	INSERT
Block Fuel	INSERT
TAKEOFF DATA INSERTION (PAGE: PERF)	
T.O. SHIFT	AS REQD
V1, VR, V2	INSERT
FLEX TO Temp	INSERT
THR RED/ACC Altitude	CHECK / SET
ENG Out ACC Altitude	CHECK / SET
Flaps/THS	INSERT
Next Phase	PRESS
Preset Speeds (PERF Pages)	As REQD
Loudspeaker	SET
Barometric Pressure	SET ALL
FD 1/2	ON
LS 1/2	AS REQD
ND Mode Range	AS REQD
ADF/VOR Selector	AS REQD
SPD Mach Window	CHECK
HDG-VS / TRK-FPA Push Button	CHECK
ALT Window	SET

REGUL LO PR IND (CHECK NOT DISPLAYED)	
DOOR/OXY SD Page	CHECK
EFIS DMC Selector	NORM
PFD/ND Brightness	CHECK
PFD	CHECK
ND	CHECK
SD PAGE PUSH BUTTON (PRESS)	
PRESS SD Page	CHECK
STS PAGE PUSH BUTTON (PRESS)	
INOP SYS Display	CHECK
IRS Align	CHECK
Takeoff Briefing	PERFORM

Before Pushback or Start	
Final Loadsheet	CHECK
ZFW/ZFWCG	CHECK/REVISE
Loadsheet CG and ECAM CG	CHECK
Fuel On Board (FOB)	CHECK
Final Takeoff Perf Data	RECOMPUTE
FMS Takeoff Data	REVISE
Seating Position	ADJUST
FMS Perf TO Page	SELECT CAPT SIDE
FMS F-PLN Page	SELECT FO SIDE
EXT PWR	CHECK
EXT PWR Disconnection	REQUEST
Complete BEFORE ENGINES START CHECKLIST TO THE LINE.	

Before Engine Start Checklist (To The Line)	
Cockpit Prep	COMPLETED
ACARS INIT	COMPLETED
Gear Pins and Covers	REMOVED
Signs	ON/AUTO
ADIRS	NAV
Fuel Quantity	CHECK
TO Data	SET
Baro Ref	SET

Before Engine Start	
Pushback/Start-Up Clearance	OBTAIN
ATC	SET
WINDOWS AND DOORS	
CPT Window	CLOSED
FO Window	CLOSED
Doors	CLOSED
Flight Deck Door	CLOSED
Slides	ARMED
Beacon Switch	ON
Thrust Levers	IDLE
Accu Press Indicator	CHECK
Park Brake Handle	ON
NW STRG DISC Memo	DISPLAYED
Complete BEFORE ENGINES START CHECKLIST BELOW THE LINE	

Before Engine Start (Below The Line)	
Flight Deck Door	CLOSED
Windows/Doors	CLOSED
Beacon	ON
Thrust Levers	IDLE
Parking Brake	AS REQD
Transponder	AS REQD

Engine Start	
Engine Start Selector	IGN START
Engine 1 Start	ANNOUNCE
Engine 1 Master	ON
Engine Idle Parameters	CHECK
Engine 2 Start	ANNOUNCE
Engine 2 Master	ON
Engine Idle Parameters	CHECK

After Engines Start	
Engine Start Selector	NORM
APU Bleed	OFF
ENG Anti-Ice	AS REQD
Wing Anti-Ice	AS REQD
APU Master Switch	OFF
NWS Towing Fault Light	OFF
Ground Spoilers	ARM
RUDDER TRIM POSITION (CHECK)	
RESET Push Button	PRESS
Flaps Lever	SET
Flaps	CHECK
Pitch Trim	CHECK
ECAM (CHECK)	
STS Push Button	PRESS AND REVIEW

Nose Wheel Steering Disc Memo	CHECK
Ground Crew Cleared to Disconnect	ANNOUNCE
Complete AFTER START CHECKLIST.	

After Start Checklist	
Anti-ice	AS REQD
ECAM Status	CHECKED
Pitch Trim	CHECKED
Rudder Trim	ZERO
Ground Equipment	CLEAR

Taxi-Out	
Taxi Clearance	OBTAIN
Nose Light	TAXI
RWY Turn Off	AS REQD
Parking Brake	OFF
Brakes Pressure	ZERO
Thrust Levers	AS REQD
Brake Pedals	PRESS
Brakes	CHECK
Brakes Pressure	ZERO
Tiller or Rudder Pedals	AS REQD
Flight Controls	CHECK
ATC Clearance	CONFIRM
FMS DATA (CONFIRM)	

F-PLN (SID, TRANS)	REVISE OR CHECK
Initial Climb Speed and Speed Limit	REVISE OR CHECK
Cleared Altitude on FCU	SET
Heading on FCU	AS REQD
Both FD	ON
PFD/ND	CHECK
Takeoff Briefing	CONFIRM
Radar	ON
Predictive Windshear System (PWS)	AUTO
ATC (Transponder) Code/Mode	CONFIRM SET
TERR on ND	AS REQD
Auto Brake MAX	ON
T.O. CONFIG	TEST
T.O. MEMO	CHECK
Cabin Report	RECEIVED
Complete BEFORE TAKEOFF CHECKLIST TO THE LINE.	

Before Take Off Checklist (To The Line)	
Flight Controls	CHECKED
Flight Instruments	CHECKED
Briefing	CONFIRMED
Flaps Setting	CONFIRM
V1, Vr, V2/Flex Temp	ANNOUNCE
ATC (Transponder)	SET
ECAM MEMO (TO NO BLUE)	

Signs	ON
SPLRS	ARMED
Flaps	T.O.
Auto BRK	MAX
T.O. CONFIG	NORM

Runway Line-Up	
BRAKE FANS (CHECK)	
Brake Temperature	CHECK
Line-up or Takeoff Clearance	Obtain
Strobe	ON
TCAS	TA/RA
Approach Path	CLEAR
Cabin Crew	ADVISE
Engine Start	AS REQD
Sliding Tables	STOW
Take Off Runway	CONFIRM
PACK1 and PACK2	AS REQD
Complete BEFORE TAKEOFF CHECKLIST BELOW THE LINE.	

Before Take Off Checklist (Below The Line)	
Take Off Runway	CONFIRMED
Cabin Crew	ADVISED
TCAS	SET
Engine Start Selector	AS REQD
PACKS	AS REQD

Takeoff	
Takeoff Clearance	OBTAIN
Nose Light	T.O.
RWY Turn Off Lights	ON
Landing Lights	ON
"Take Off"	ANNOUNCE
Thrust Levers	SET
SIDESTICK (CHECK)	
If Crosswind is below 20 KTS and no tailwind	APPLY HALF FORWARD SIDESTICK UNTIL 80KTS MOVE TO NEUTRAL BY 100 KTS
If Crosswind is greater than 20 KTS or tailwind	APPLY FULL FORWARD SIDESTICK UNTIL 80 KTS MOVE TO NEUTRAL BY 100 KTS
Brakes	RELEASE
Thrust Levers	FLX OR TOGA
Directional Control	AS REQD
Chrono	START
PFD/ND	MONITOR
FMA	ANNOUNCE
Takeoff EPR/N1	CHECK

“Thrust Set”	ANNOUNCE
PFD And ENG Indications	MONITOR
“One Hundred Knots”	ANNOUNCE
V1	MONITOR OR ANNOUNCE
At VR Rotation	ORDER
Rotation	PERFORM
“Positive Climb”	ANNOUNCE
“Landing Gear Up”	ORDER
Landing Gear	UP
Autopilot	AS REQD
THRUST REDUCTION	
Thrust Levers	CL (CLIMB)
PACK1 and PACK2 (If Applicable)	ON
AT ACCELERATION ALTITUDE (CHECK)	
At F Speed Flaps 1	ORDER
Flaps 1	SELECT
At S Speed Flaps 0	ORDER
Flaps 0	SELECT
Ground Spoilers	DISARM
Nose Light	OFF
RWY TURN OFF Lights	OFF
Other Exterior Lights	AS REQD

After Takeoff	
APU Bleed	OFF
APU Master	OFF
TCAS	TA/RA
Engine Anti-Ice	AS REQD
Wing Anti-Ice	AS REQD
Complete CLIMB CHECKLIST TO THE LINE	

Climb Checklist (To The Line)	
Landing Gear	UP
Flaps	RETRACTED
Packs	ON

Climb	
PF MCDU	PERF CLB
PM MCDU	F-PLN
Barometric Reference	SET
CRZ FL	AS REQD
ENG anti-ice	AS REQD
Complete CLIMB CHECKLIST BELOW THE LINE	

Climb Checklist Below The Line	
Baro Ref	SET

Above FL100/10,000 FT	
Landing Lights	OFF
Seat Belts	AS REQD
EFIS Option	AS REQD
ECAM Memo	REVIEW
NAVAIDS	CLEAR
SEC F-PLN	AS REQD
OPT/MAX ALT	CHECK

Top Of Climb / Cruise	
ECAM Memo	REVIEW
ECAM SD PAGES (REVIEW)	
ENG	REVIEW
BLEED	REVIEW
ELEC	REVIEW
HYD	REVIEW
COND	REVIEW
DOOR	REVIEW
F/CTL	REVIEW
FUEL	REVIEW
Flight Progress	CHECK
Step Flight Level	AS REQD
NAV Accuracy	MONITOR
Radar Tilt	ADJUST

Descent Preparation	
Weather and Landing Information	OBTAIN
NAV Charts	PREPARE
ARRIVAL PAGE (CHECK)	
Lateral Revision (LSK By The Arrival Airport)	SELECT
APPR, STAR, TRANS and APPR VIA	ENTER
F-PLN A Page	CHECK
DES Wind Page	CHECK / ENTER
PERF CRUISE Page	CHECK
PERF DES Page	CHECK
PERF APPR PAGE (CHECK)	
QNH, Temperature and Wind at Destination	ENTER
Minimum	INSERT
Landing Config (Flaps)	AS REQD
Transition Altitude	AS REQD
PERF GO-AROUND PAGE (CHECK)	
THR RED ALT and ACC ALT	AS REQD
RADIO NAV PAGE (CHECK)	
Set NAVAIDS	AS REQD
SEC F-PLN Page	AS REQD
FMS Preparation	CHECK
LDG ELEV	CHECK

AUTO BRK (CHECK)	
On Short or Contaminated Runways	MED
On Long Runways	LOW
Approach Briefing	CONFIRM
TERR ON IND	AS REQD
Radar	ADJUST
Engine Anti-Ice	AS REQD
Wing Anti-Ice	AS REQD
Descent Clearance	OBTAIN
Cleared Altitude on FCU	SET

Descent

DESCENT (INITIATE)	
Push ALT on FCU	MANAGED DESCENT
Pull ALT on FCU	OPEN DESCENT
PF MCDU	PROG/PERF PAGE
PM MCDU	F-PLN
Descent	MONITOR
Barometric Reference	SET
ECAM Status	CHECK

Below FL100/10,000 FT	
Land Lights	ON
Seat Belts	ON
EFIS Option	CSTR
LS	AS REQD
RAD NAVAIDS	SELECT
Engine Start Selector	AS REQD
NAV Accuracy	CHECK
Complete APPROACH CHECKLIST	

Approach Checklist	
Briefing	CONFIRMED
ECAM Status	CHECKED
Seat Belts	ON
Baro Ref	SET
Minimum	SET
Engine Start Selector	AS REQD

Initial Approach	
F-PLN Sequencing	ADJUST
APPROACH PHASE (CHECK)	
If Aircraft Flies Over DECEL Pseudo Waypoint	CHECK
MANAGED SPEED (CHECK)	
If ATC Requires Specific	CHECK

Flight Path	MONITOR
Speed Brakes	AS REQD
Radar	ADJUST
NAV Accuracy	MONITOR

Intermediate / Final Approach	
TCAS Mode Selector	TA/RA
Flaps 1	ORDER
Flaps 1	SELECT
Flaps 2	ORDER
Flaps 2	SELECT
Landing Gear Down	ORDER
Landing Gear Lever	SELECT
Auto Brake	CONFIRM
Ground Spoilers	ARM
Nose Light	T.O.
RWY Turn Off Lights	ON
Flaps 3	ORDER
Flaps 3	SELECT
ECAM WHEEL SD Page	CHECK
Flaps Full	ORDER
Flaps Full	SELECT
A/THR	CHECK
Wing Anti-Ice	OFF
Sliding Table	STOW
Cabin Crew	ADVISE
Cabin Report	RECEIVE

LDG Memo	CHECK

ILS Approach (LOC/GS)	
Approach Minimum	DETERMINE
APPR Push Button on FCU	PRESS
Both Autopilots	ENGAGE
LOC (Blue)	ARMED
G/S (Blue)	ARMED
LOC Capture	MONITOR
G/S Capture	MONITOR
Go-Around Altitude	SET
Land Mode	ENGAGED/ANNOUNCE
One Hundred Above	MONITOR OR ANNOUNCE
Minimum	MONITOR OR ANNOUNCE
IF VISUAL REFS ARE SUFFICIENT (CHECK)	
Continue	ANNOUNCE
Autopilot	AS REQD
IF VISUAL REFS NOT SUFFICIENT (CHECK)	
Go-Around	PERFORM

RNAV Approach	
For RNAV (GNSS) Approaches	CHECK
PROG PAGE (CHECK)	
Reference RWY in BRG/DIST Field	INSERT
APPR Push Button on FCU	AS REQD
APP NAV (Blue or Green)	ARMED/ENGAGED
FINAL (BLUE)	
PFD	CHECK
Blue Arrow on ND	CHECK
Final APP	ENGAGED
Go-Around Altitude	SET
One Hundred Above	MONITOR OR ANNOUNCE
Minimum	MONITOR OR ANNOUNCE
IF VISUAL REFS ARE SUFFICIENT (CHECK)	
Continue	ANNOUNCE
Autopilot	OFF
Flight Director	OFF
TRK FPA	SELECT
Runway Track	SET
IF VISUAL REFS NOT SUFFICIENT (CHECK)	
Go-Around	PERFORM AS REQD

Non-Precision Approach (TRK/FPA)	
LATERAL GUIDANCE MODE (CHECK)	
Use NAV	AS REQD
Use LOC	AS REQD
LOC Push Button	AS REQD
LOC / LOC B/C	ARMED
Lateral Path	INTERCEPT
TRK-FPA Push Button (BIRD)	SELECT
FPA for Final Approach	SET
FPA Selector	PULL
FPA Mode	ENGAGED
Go-Around Altitude	SET
One Hundred Above	MONITOR OR ANNOUNCE
Minimum	MONITOR OR ANNOUNCE
IF VISUAL REFS ARE SUFFICIENT (CHECK)	
Continue	ANNOUNCE
Autopilot	OFF
Flight Director	OFF
TRK FPA	SELECT
Runway Track	SET
IF VISUAL REFS NOT SUFFICIENT (CHECK)	
Go-Around	PERFORM AS REQD

Landing Checklist	
Cabin Crew	ADVISED
Auto Thrust	AS REQUIRED
Autobrake	AS REQUIRED
Missed Approach Altitude	SET
ECAM Memo	CHECK

Go-Around	
Thrust Levers	TOGA
Rotation	PERFORM
Go-Around	ANNOUNCE
Flaps Lever	RETRACT ONE STAGE
FMA	ANNOUNCE
Positive Climb	ANNOUNCE
Landing Gear Up	ORDER
Landing Gear	SELECT
NAV or HDG Mode	AS REQD
Autopilot	AS REQD
Thrust Levers	CL
At F Speed Flaps 1	ORDER
Flaps 1	SELECT
At S Speed Flaps 0	ORDER
Flaps 0	SELECT
Ground Spoilers	DISARM
Nose Light	OFF
RWY TURN OFF Lights	OFF
Follow missed approach procedure	

Complete CLIMB CHECKLIST TO THE LINE

After Landing	
Ground Spoilers	DISARM
Landing Lights Switch	OFF
Strobe Lights	AUTO
Nose Light	TAXI
Other Exterior Lights	AS REQD
Radar	OFF
Predictive Windshear System (PWS)	OFF
ENG Start Selector	NORM
Flaps	Retract
TCAS	STBY
ATC	AS REQD
APU	START
Anti-Ice	AS REQD
Brake Temperature	CHECK
Brake Fans	AS REQD
Complete AFTER LANDING CHECKLIST	

After Landing Checklist	
Flaps	RETRACTED
Spoilers	DISARMED
APU	START
Radar	OFF
Predictive Windshear System	OFF

Parking	
ACCU PRESS Indicator	CHECK
Park Brake Handle	ON
Brakes PRESS Indicator	CHECK
Anti-Ice	OFF
APU Bleed Push Button	ON
All Engine Masters	OFF
Slide Disarmed	CHECK
Seat Belt Switch	OFF
Beacon Lights	OFF
Other Exterior Lights	AS REQD
Fuel Pumps	OFF
ATC	STBY
Complete PARKING CHECKLIST.	

Parking Checklist	
APU Bleed	ON
Engines	OFF
Seat Belts	OFF
Exterior Lights	AS REQUIRED
Fuel Pumps	OFF
Park Brake and Chocks	AS REQUIRED
Transponder	AS REQUIRED

Securing Aircraft	
Park Brake	ON
Oxygen Crew Supply Push Button	OFF
ALL IR Mode Selectors	OFF
Exterior Lights	OFF
APU Bleed Push Button	OFF
EXT PWR Push Button	OFF
APU Master Switch	OFF
Emergency Exit Light Switch	OFF
Signs Switches	OFF
BATT 1, 2 & APU	OFF
Complete SECURING AIRCRAFT CHECKLIST.	

Securing Aircraft Checklist	
ADIRS	OFF
Oxygen	OFF

APU Bleed	OFF
Emergency Exit Lights	OFF
Signs	OFF
APU and Batteries	OFF