

AIRBUS A320

TOLISS

Flight Tutorial
Level 1



For X-PLANE

AIRBUS A320

ToLiss

This tutorial describes the following aspects of a flight:

- Loading and starting the aircraft in a “cold and dark” configuration for the first flight of the day and shutting it down at the end of the flight.
- Entering a flight plan from the departure airport to the destination, including fuel requirements, standard departures and arrivals, and vertical navigation.
- Modifying the flight plan before departure and during flight.
- Switching between managed and selected autopilot operation.
- Diverting to another airport.
- Saving a flight situation to resume it later under the same conditions.

This tutorial describes a takeoff from **PARIS ORLY** (ICAO: **LFPO**) to **AJACCIO** (ICAO: **LFKJ**), with two different approaches and landings on runways 02 and 20 at AJACCIO.

These two examples cover takeoff, cruise, and two theoretical approaches where the programmed flight plan is followed in its entirety. For this reason, these approaches are purely fictional compared to reality, but they are intended to help you understand and become familiar with the logic of the Airbus A320 flight systems.

The third approach more closely resembles real operations: it considers the intervention of Air Traffic Control, which assumes control of the aircraft at the latest by the end of the cruise phase.

Special thanks to **Florent MARTIN**, instructor and Airbus A320 pilot at Air France, who shared his experience and knowledge to make this simulation manual as realistic as possible.

It is worth remembering a native **X-Plane** feature that allows you to save one or more views and instantly recall them when needed.

Simply press the **Ctrl** key together with a key on the numeric keypad.

Pressing that numeric key later will immediately return you to the saved view. This allows you to save up to 10 views.

Also note that all cockpit screens can be displayed as **pop-up windows**. These windows are resizable (except the MCDU) and movable. Simply click on the screen when the mouse pointer changes to a magnifying glass icon.

Bernard DIREIZ MARCH 2026
Translated by Christian XERRI

Loading the aircraft into X-PLANE.

In the X-PLANE main menu, click the **"NEW FLIGHT"** window.

Select the **ToLiss Airbus A320neo** in the aircraft menu (click on the A320 ToLiss thumbnail).



Click the **"Customize"** button below the aircraft icon.

Make sure the box **"Start with engines running"** at the bottom right is unchecked.

Select the departure location: **"Paris Only"** (ICAO: LFPO), gate **N11** for this tutorial.

For weather, this tutorial uses **predefined conditions**. Otherwise, the departure/arrival runway, might not match the actual weather.

Select **"Customize"** in the weather dialog and make the following settings:

- ✓ **Bottom left – "Manual/Actual Weather":** select **"Enter weather manually"**.
- ✓ **Top Center – Select "Clear"**.
- ✓ **Top right – "Atmospheric conditions":** set **"airport temperature"** to **8°C** and **"atmospheric pressure"** to **1013 hPa**.
- ✓ **Top left – "Cloud layer":** optionally, add the following three wind layers:
 - Altitude 3,000 ft MSL: 070° magnetic, speed 10 kt.
 - Altitude 10,000 ft MSL: 090° true, speed 20 kt.
 - Altitude 30,000 ft MSL: 100° true, speed 50 kt.

Confirm with **OK** (bottom right).

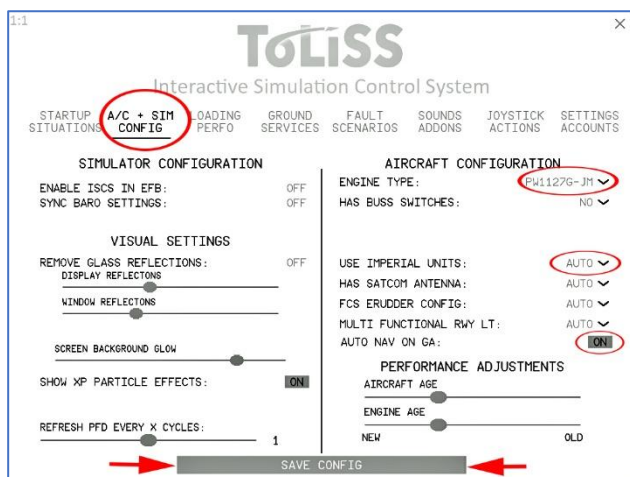
Adjust the **TIME OF DAY** slider left or right to achieve the lighting conditions you prefer.

Click **Start Flight** to load the ToLiss Airbus.

Then, in the XPlane menu, go to **Plugins -> ToLiss -> Open ISCS screen**.

This plugin, associated with this aircraft, allows you to:

- ✓ Configure a cold and dark situation (first flight of the day) with the engines off.
- ✓ Interact with the ground crew for chocks installation and external power connection.
- ✓ Calculate aircraft performance data and perform many other tasks.

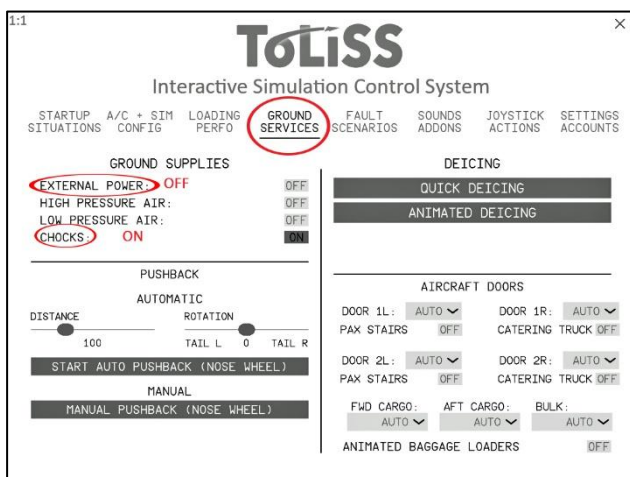


In the "A/C + SIM CONFIG" tab

Check that all options in the **Aircraft Configuration** section are set to **AUTO**, except for **ENGINE TYPE**, which should be set to **PW1127G-JM** (if set to AUTO, the system will choose the engine type based on the aircraft livery).

Select "**AUTO NAV ON GA**" to **ON**. Do not change the settings in the left column (**LOAD/SAVE SITUATIONS**).

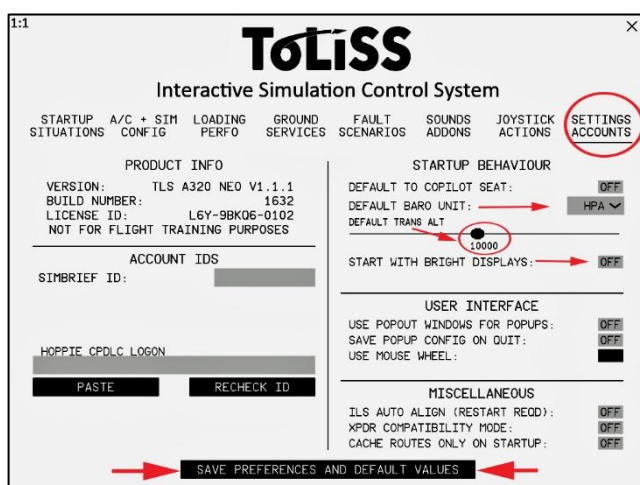
Important: Click **SAVE A/C CONFIG** at the bottom of the screen. The text will briefly turn white, confirming that the preferences have been saved.



In the GROUND SERVICES tab

In the left column select:
EXTERNAL POWER -> OFF
CHOCKS -> ON

Other options do not need to be changed.



In the SETTINGS ACCOUNTS tab

BARO UNIT DEFAULT: HPA.

DEFAULT TRANS ALT: 10,000
(Unimportant parameter, as transition altitude varies by country airport).

START WITH BRIGHT DISPLAYS: OFF.

USE MOUSE WHEEL: ON

All other settings can remain as is.

Important: Click **SAVE PREFERENCES AND DEFAULT VALUES** at the bottom of the window. The text will briefly turn white to confirm the preferences are saved. Then, close the ISCS via the cross in the upper right corner.

Starting the aircraft.

Powering up from the “cold and dark” configuration

This is the **first flight of the day**. It may still be dark and cold, depending on the season. The aircraft has not been fueled since the previous day, and the cabin temperature is low. A maintenance team may have boarded earlier to perform system checks. Before this first flight, additional verifications are required compared to subsequent flights during the day.



Center console:

Both **ENG MASTER** switches-**OFF**

ENG MODE selector - **NORM**



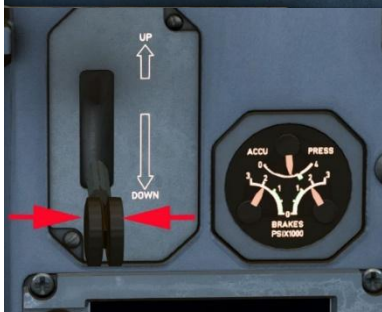
Weather radar panel

(to the left of the engine controls):

Check that:

✓ **GCS** switch of the WX radar system - **OFF**

✓ **PWS** switch - **OFF**



Main instrument panel , in the middle

Landing gear lever - **DOWN**



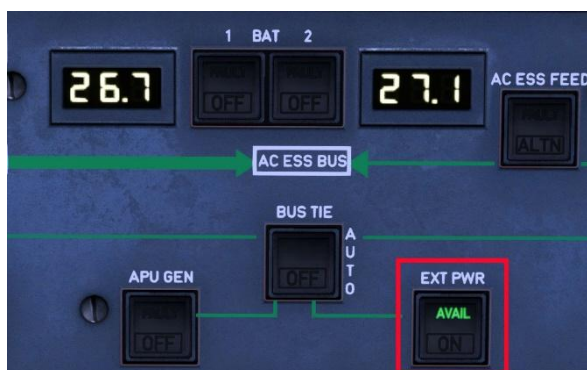
On the lower part of the overhead panel, at both left and right ends, verify that **wipers** are **OFF** (WIPER rotary knobs in the OFF position).



Check that **battery voltages** are above **25.5V**. Both **BAT 1** and **BAT 2** buttons should be **OFF**. Press the **left BAT** button, the indicator light integrated into the **right BAT** button illuminates **OFF**. Press this right button to extinguish it. Both battery buttons are now **ON**: the aircraft is powered by its batteries.

Activate the external power supply:

- Open the **ISCS** -> **GROUND SERVICE** tab and
- In the left column, under **GROUND SUPPLIES**, set **EXTERNAL POWER** to **ON**.



After confirming that external power supply is available (**AVAILABLE** light illuminated green on the **EXT PWR** button under the battery switches), press the **EXT PWR** button on the overhead panel. The button illuminates **ON** (blue).

All screens light up and display the green 40-second message:

"SELF TEST IN PROGRESS".



AIR CONDITIONING panel

Verify:

- No lights illuminated on the **AIR COND** panel (center of the overhead panel) except the **FAULT** lights of **PACK 1** and **PACK 2**.
- **X BLEED** button - **AUTO**

Set the **temperature selection knobs** (COCKPIT, FWD CABIN, AFT CABIN) as desired.



Turn off the **DOME light**. This ceiling light is not normally used during flight.

Perform a **light test** by setting the **ANN LT** switch to **TEST**. Once the test is complete, return it **BRT**.

SEAT BELTS - ON; NO SMOKING - ON;
EMER EXIT LT - ARM.

Turn on the **external lights**:

NAV & LOGO - ON (left side of this panel).



Adjust Screen Brightness

The rotary knobs for adjusting the brightness of the **PFD** (Primary Flight Display) and **ND** (Navigation Display) are located besides each screen:

- For the **captain**, the knobs are to the **left** of the PFD
- For the **first officer**, to the **right**.

For **ND**, the **inner knob** adjusts screen brightness. The **outer knob** controls radar or terrain image intensity.

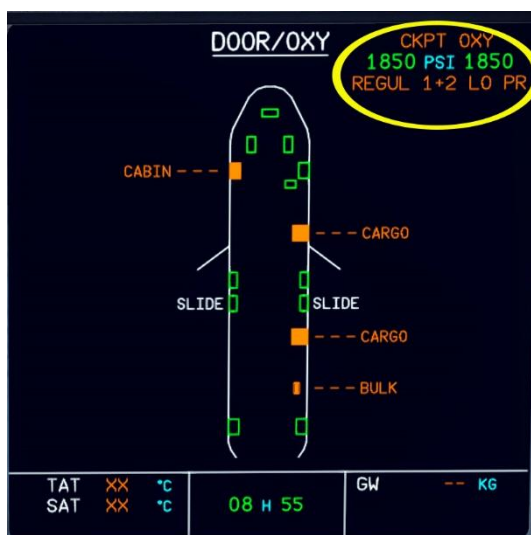


IRS not aligned. At this stage, the PFD and ND do not display any data.



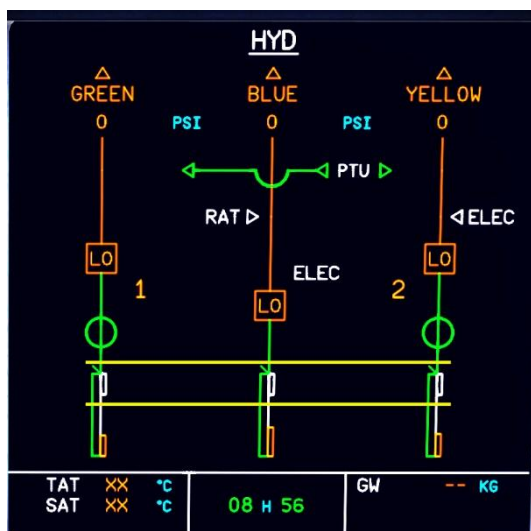
The brightness knobs for the EWD (Engine/Warning Display) and SD (System Display) are located on the pedestal, just forward of the thrust levers and between the two MCDUs.

Press the **DOOR** button to display the system status on the ECAM.

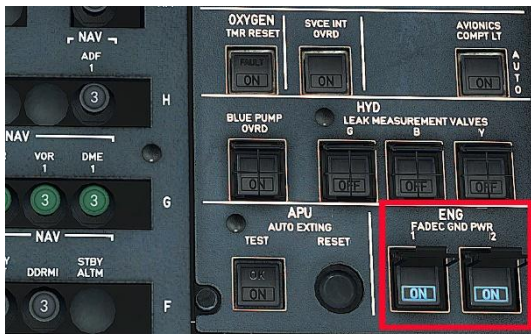


Oxygen and Hydraulic Checks

Check the **crew oxygen level**; the cockpit oxygen pressure indication must **not** be boxed in orange.



Press the **HYD** button on the ECAM control panel – verify that all three hydraulic system fluid levels are within the **green range**.



Engine Oil Quantity Check

The FADEC must be powered to provide a valid engine oil quantity indication. Set FADEC Ground Power to ON:

On the **maintenance** section of the overhead panel (above and to the right of the circuit breakers), press once to lift the protective cover of each **FADEC GND PWR** switch. Then, press again the switches to set them to **ON (blue)**.



Press the ENG button on the ECAM control panel. Check that the oil quantity for all engines is **above 14.0 qt**.

Press ENG again to close the page.

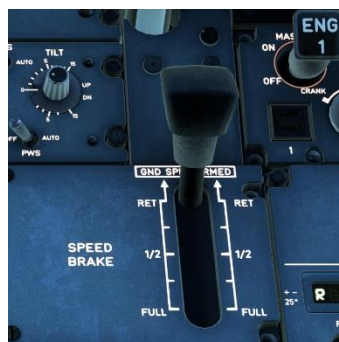
Then, turn **OFF** both FADEC ground power switches and close their protective covers.

Control Levers and Switches



FLAPS lever - 0.

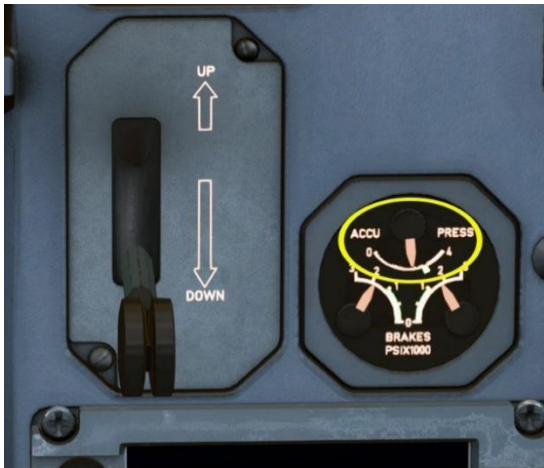
Verify flaps and slats are fully retracted on the upper ECAM.



SPEED BRAKE lever (spoiler):

Left: **armed spoiler** (visible white band)

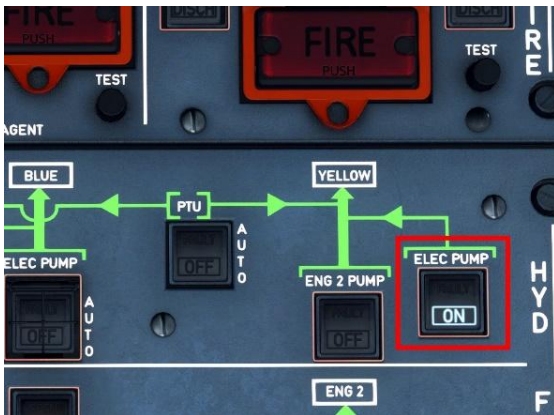
Right: **disarmed spoiler** (retracted, white band not visible).



Brake System

Check the **brake accumulator pressure** (indicator instrument located next to the landing gear lever on the main panel).

Pressure should be in the green range (2 to 4). If not, use the yellow electric hydraulic pump to recharge the accumulator.



On the overhead top panel, center column (below the fire test switches):

Turn **ON** the **yellow electric pump**, wait 20 seconds, then turn it **OFF**.

The blue **ON** light goes out.



Ensure the **parking brake** is applied, then verify:

- Brake accumulator pressure in the **green band**.
- **Left and right brake pressures** approximately 2000 psi.



PROBE/WINDOW HEAT:

Probe/window heat switch (overhead panel):

AUTO position -> indicator light **off**.

Cockpit preparation.

If starting the aircraft in "cold and dark" mode or with **external power applied but IRUs off**, complete all the following steps.

Turn off all white lights on the overhead panel, this means **turn on all fuel pumps** and press any remaining white-lit switches to extinguish them.



On the overhead panel, (bottom of the left column), press the **CREW SUPPLY** button if it is **OFF**.

The OFF light extinguishes.



On the same panel (middle- left column), press the **GND CTL** button (ON, blue). Then press and hold the **CVR TEST** button.

You should hear a continuous **800 Hz tone**, confirming a successful test.



ADIRU Alignment

Position each **ADIRU selector** from **OFF** to **NAV**, **one at a time**, starting **from left to right**. This action powers the ADIRUs and initiates the **inertial alignment process**.

Check that the ON BAT light illuminates. This indicates that the **ADIRU internal battery** is supplying power during the initial alignment phase, confirming correct battery operation.

Wait until the ON BAT light extinguishes before selecting the next ADIRU to NAV. Proceed in the same manner for **ADIRU 2**, then **ADIRU 3**.

When all three ADIRUs are **ON**, no lights remain illuminated.

Alignment takes approximately **7 minutes** and must be completed **before taxi**. During taxi, the ADIRU alignment cannot occur.

Note: The ADIRUs are connected directly to the battery bus as a backup source. Therefore, they must be turned **OFF before aircraft shutdown** to prevent battery discharge.

Exterior Lights (Bottom of Top Left Panel)

- ✓ **STROB ON - AUTO**
(Lights will automatically turn ON during takeoff if you forgotten).
- ✓ **NAV & LOGO - 1 (or 2).**

All other exterior lights - **OFF** for now

Interior lights (bottom of (top right panel).

Check:

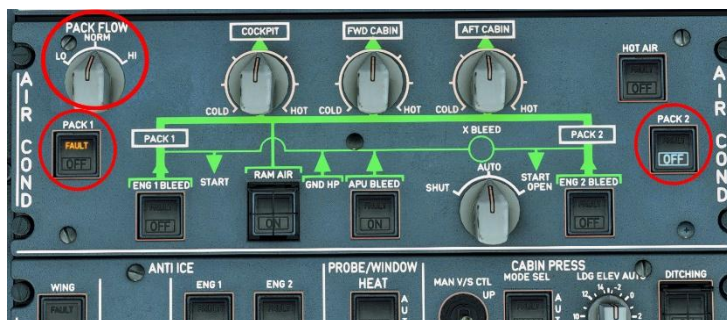
- ✓ **SEAT BELTS - ON** ("Fasten Seat Belts" sign illuminated).
- ✓ **NO SMOKING - ARM** (remains ON for all flights).
- ✓ **EMER EXIT LT - ARM** (activate emergency evacuation lighting).



Cabin pressurization.

Ensure the **CABIN PRESS** LDG ELEV selector (below and above the interior light switches) is in the **AUTO** position.

The [**AUTO**] button must be **OFF**. Otherwise, the system is in "MAN mode).



Air Conditioning Adjustment

(AIR COND panel - Overhead, center column)

Set the PACK FLOW selector to the appropriate setting:

- ✓ **LO** - if fewer than **141 passengers** are on board.
- ✓ **NORM** - if **141 or more passengers** (this is the setting we will use in this tutorial).
- ✓ **HI** - if operating in **very humid or hot conditions** (e.g., Singapore or Bangkok), select **HI** while on the ground.

Note: PACK 1 and PACK 2 are not operational at this stage and will show **FAULT** indications. They will automatically active as soon as compressed air becomes available, either from the **APU** or, primarily, from the **engines**. Press the buttons if they display **OFF** (to extinguish the light).

Electrical System Check - Upper Panel.

Ensure there are **no orange lights**, except for the **GEN FAULT** lights.

Next, perform a **battery charge cycle** to confirm proper charge levels for this flight.



1. Turn each **BAT** switch **OFF**, then **ON** again (the lights will illuminate briefly, then extinguish).



2. Press the **ELEC** button on the **ECAM control panel** (below the System Display).

3. On the **ELEC** page of the SD, confirm that both batteries are **charging**, and that **charging current is less than 60 A** after 10 sec.

4. Press **ELEC** again to close the page.

Engine and APU Fire Warning & Extinguishing Test.

Overhead panel - top center.



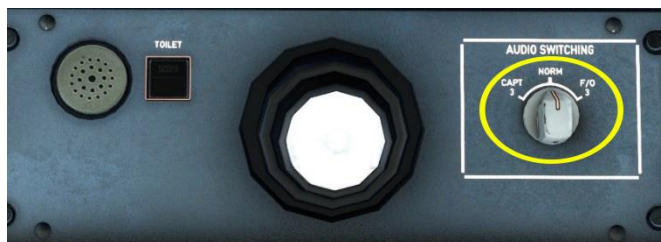
1 Verify that the **ENG 1** and **APU FIRE** pushbuttons are **ON** and that their **protective covers** are **closed**.

2 Ensure that the **AGENT 1** and **AGENT 2** buttons show **not lights** (OFF)

Perform the following **fire test** for each engine (1 and 2) and the **APU**. You may open the **EWD pop-up** to monitor warnings while testing.

- ✓ Press the **3 FIRE TEST** buttons.
- ✓ Verify that the associated **FIRE pushbutton** illuminates red.
- ✓ Verify that the **SQUIB** and **DISCH** lights on the **AGENT** buttons illuminate.
- ✓ Confirm that the **MASTER WARNING** light illuminates and that a **continuous warning tone** sounds. If not audible, adjust the speaker volume.
The main warning stops automatically once the **TEST** button is released.

Audio and Ventilation Systems, Overhead Panel - Above Fire Test Section.

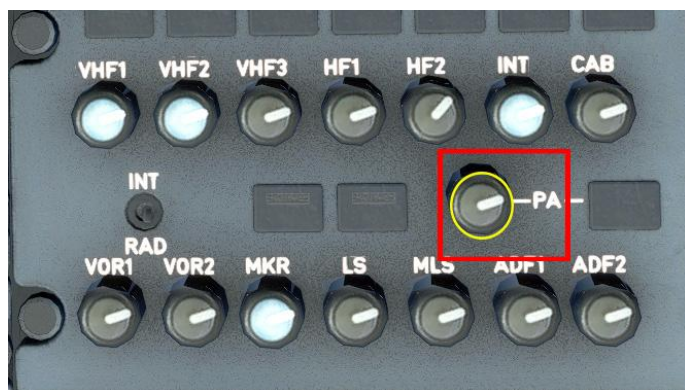


Verify that the **AUDIO SWITCHING** switch is in the **NORM** position.



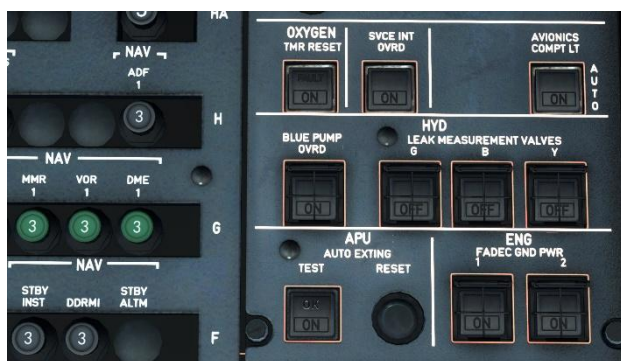
Ventilation Panel - Overhead Right Column, Bottom.

Confirm that **all lights** on the ventilation panel are **OFF**.



Public Address System. On the top panel, right column (above the fire test section), activate the **PA reception**.

Click the **PA** button – it should illuminate **ON**.



Maintenance Panel – Overhead, Top Right

Verify that **all lights** on the maintenance panel are **OFF**.



Confirm that there are **no warning flags** on the **integrated emergency instrument** on the instrument panel, and that **attitude, speed and altitude** indications are reasonable.



Switch A/SKID and N/W STRG - ON.

Landing gear lever - DOWN.

Switch panel (center console, between MCDUs).



All buttons in **NORM**.



Thrust levers - IDLE

Note: If your physical throttles (TCA) are at IDLE but the virtual levers appear above idle, you may need to enable the "REV on same axis" option in the ISCS → Joystick tab.



ENG MASTER 1 and ENG MASTER 2 - OFF (bottom).

ENGINE MODE selector - NORM

Verify:

- ✓ Parking brake **set**
- ✓ Brake accumulator pressure in the **green range**
- ✓ Brake pressure approximately **2000 psi**



Gravity Gear Extension

On the center console, below the parking brake lever:

Verify that the **gravity mechanism extension handle** is **stowed** (folded position).



Transponder & ATC System

On the lower right center console:

- Set **ATC SYS** to **System 1**.
- Set **Transponder** to **STBY**.
- The **transponder code** assigned by ATC in the departure clearance will be entered at a later stage.



NAV Radios.

On the center console, on both sides of the thrust levers:

- Turn on both **NAV radios** by lifting both switches to **ON**.
- Verify that both **NAV lights (green LEDs)** are **OFF**. If a green LED is ON:
 1. open the protective cover (click once),
 2. click again to turn off the green LED
 3. click a third time to close the cover.

Important: If the NAV lights are illuminated, the **RAD NAV** on the **MCDU** will be disabled.

Note: The **RMPs (Radio Management Panels)**- one for the Captain, one for the First Officer- are used to manually tune **VOR1** and **VOR2** frequencies. This is not part of the **normal procedure**.

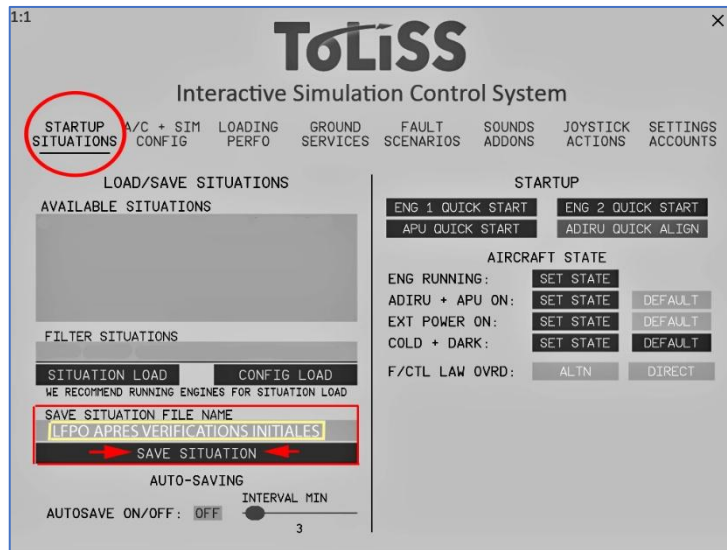


Radio Power

On the overhead panel (top right, beside the fire tests):

1. Turn the **RADIO MASTER** switch to **ON** (lift the switch).
2. Verify that the **NAV indicator light** is **OFF**.

Saving the Situation



Now that all **pre-flight checks for the first flight of the day** have been completed, it is useful to save this situation for future use in **X-Plane**.

1. Open the **ISCS -> STARTUP SITUATIONS** tab.
2. At the bottom left, under **SAVE SITUATION FILE NAME** type a name for your backup, e.g.: LFPO AFTER INITIAL CHECKS.
3. Click **SAVE SITUATION**.

The save is now complete.

To reload this situation later.

- ✓ Open **ISCS -> STARTUP SITUATIONS**.
- ✓ Under **AVAILABLE SITUATIONS**, select your saved file.
- ✓ Click **LOAD SELECTED SITUATION**. After a few moments the aircraft will load in exactly the same configuration.

FMGS Initialization

This section must be completed for **all flights**, regardless of start-up mode.

Our tutorial flight: **PARIS ORLY (LFPO) -> AJACCIO (LFKJ)**.

Flight Plan Route:

LFPO LUREN **A1** DJL **B37** PAS **J41** VANAS **UM730** MEDAM **Y24** GAPDO **UY24** NIZ **M622** DIVUL LFKJ

The route uses several airways named here: A1; B37; J41; UM730 etc (Their names are made up of letters and numbers).

We leave one airway to branch onto another at the intersection of the two.

These intersections are DJL; PAS; VANAS; MEDAM, etc

These intersections are either NDB or VOR radio navigation beacons (named with two and three letters), or GPS points defined by their geographic coordinates (named with five letters).

To reach the entrance to the first airway from the departure airport, here LUREN, which is the start of airway A1, you must most often follow a standard route called a SID (Standard Instrument Departure) communicated by air traffic control.

The same principle applies when leaving the airway: you must follow a standard route called a STAR (Standard Terminal Arrival Rule).

This is the data that must be entered into the aircraft's computer called the FMGS (Flight Management and Guidance System) through its interface called the MCDU (Multifunction Control and Display Unit).

(See more detailed information on the MCDU on page 85).



Display the left MCDU by clicking on the MCDU screen (the mouse pointer becomes a magnifying glass to indicate that it will trigger a pop-up display).

Check that you have the correct type of aircraft and engine **A320-271N PW1127G-JM**.

Note that if you do not have this engine type, you can access the ISCS via the X-Plane menu "Plugins/ToLiss/Open ISCS Screen" to modify it.

Go to the **A/C + SIM CONFIG** tab and select the engine type **PW1127G-JM** or **AUTO**. The aircraft type will adapt accordingly.



To begin, press the **INIT** page select key on the MCDU. The **INIT** page appears.

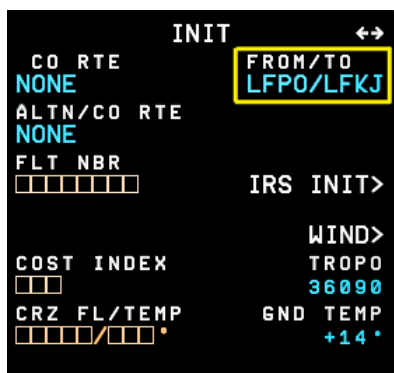
For the rest of the tutorial, when you read "*press LSK xx*", you will have to left-click on LSK xx.

If necessary, press the **CLR** key to delete the GPS PRIMARY LOST message from the MCDU scratchpad. This message informs us that the IRS are not aligned.



Using the alphanumeric keypad, enter the ICAO codes for the departure and arrival airports separated by a slash as suggested by the amber boxes in the FROM/TO line: **LFPO/LFKJ**.

The entered text **LFPO/LFKJ** is displayed in white in the scratchpad.



It remains to transfer the contents of the scratchpad into the FROM/TO line of the MCDU by clicking on **LSK 1R**.

If a previous LFPO/LFKJ flight has been recorded, it will appear below the **CO RTE** line.

You will then be able to select it as your active flight plan. (SIDs and STARs are not recorded and will need to be completed).

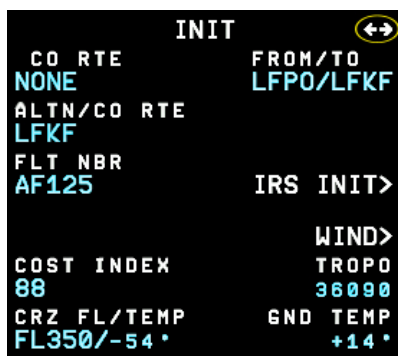
The principle of data entry in the scratchpad and their assignment in a line of the MCDU by clicking on one of the LSK L (left) or R (right) keys being acquired, the following explanations will be more concise.

The following points remain to be completed:

- ✓ **ALTN/CO RTE:** Enter the alternate airport code **LFKF (Figari)** if you cannot land in Ajaccio.
The alternate airport can be changed at any time during the flight for various reasons: medical diversion, mechanical issue, or weather conditions. The alternate airport is changed on the INIT page, and then the FMGC is asked to change the flight destination to the planned alternate airport.
- ✓ **FLT NBR:** This is the airline's flight number. You can invent a fictitious flight number of your favorite airline, for example **AF125**. This does not affect flight management. Type **AF125** on the alphanumeric keyboards and transfer this data with the **LSK 3L** key.
- ✓ **COST INDEX:** This is a number ranging from 0 to 999 set by the airline based on its hourly cost policy. With an index of 10, the FMS will calculate the most economical speed; with an index of 999, the speed determined by the FMS will be the maximum speed.
Let's imagine that our company has set the cost index at **80**.
- ✓ **GND TEMP:** This is the ground temperature. The data can be changed (in blue) if it is not accurate with the latest information.
- ✓ **TROPO:** (Tropopause). This normally does not change (but can be modified if necessary).
- ✓ **CRZ FL/TEMP:** This is the cruising altitude and the temperature at cruising altitude. Altitude can be entered either in feet (35,000) or flight level (FL350). Enter the cruising altitude **35,000** or **350** and assign it to the CRZ FL/TEMP line using **LSK 6L** without specifying the temperature.

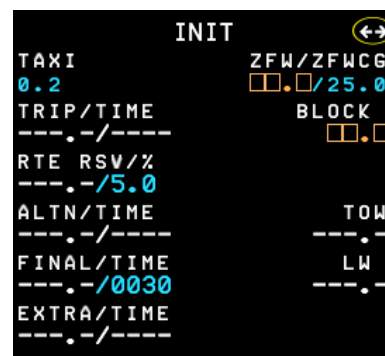
Note: There is an international regulation governing aircraft flight levels according to their heading: From heading **000° to 179°**, aircraft fly at **odd** flight levels (FL 310, FL330, FL350...). Conversely, from heading **180° to 359°**, aircraft fly at **even** flight levels (FL 320, FL 340, FL 360).

However, some European countries do not apply this rule, instead using: 'from heading **270° to 089°** = **even**, and from heading **090° to 269°** = **odd**).



With the INIT A page completed, we will move to the INIT B page using the arrow key « → »

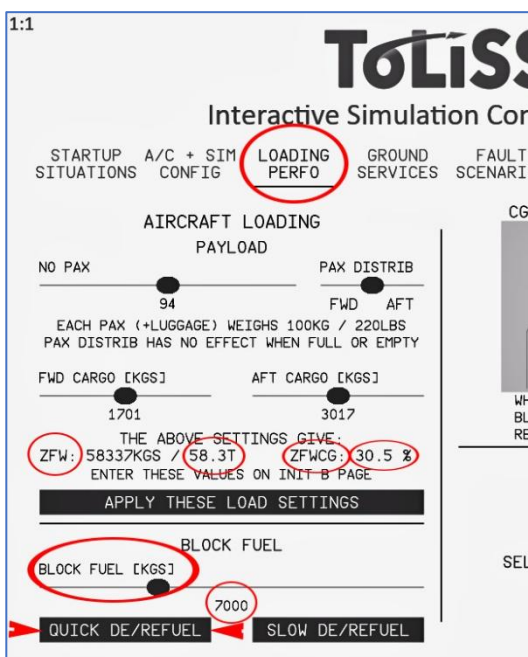
(The « ↔ » symbol at the top right of the screen indicates that a sidebar is available).



Note: The INIT B page is only accessible during the PREFLIGHT phase, when the engines are stopped. In flight, or if the engines are running, the **INIT FUEL PREDICTION** page is displayed instead of the INIT B page. The letters **A** and **B** are not displayed.

On the INIT B page, two lines must be completed:

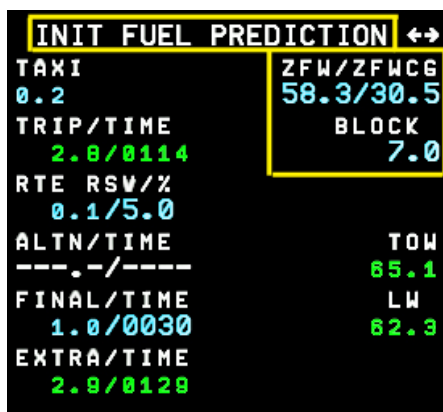
- ✓ **ZFW/ZFWCG** (separated by a slash)
(Zero Fuel Weight): total aircraft weight without fuel.
(Zero Fuel Weight Center of Gravity): center of gravity without fuel.
- ✓ **BLOCK**: Total weight expressed in tonnes of fuel in the tanks.



Open the **ISCS** on the **LOADING PERFO** tab.

You can change the payload to your liking (number of passengers, freight), but make sure that the **ZFW** value indicated in the ISCS is not shown in red (overload). Click on **APPLY THESE LOAD SETTINGS**.

BLOCK FUEL: Move the cursor to change the amount of fuel in the aircraft's tanks (here 7,000 kg), then click **QUICK DE/DEFUEL**.



In the ISCS, this data is displayed as:

ABOVE SETTINGS GIVE:

ZFW: 58337KGS / 58.3T ZFWCG: 30.5 %

Enter: **58.3/30.5** in the scratchpad, then transfer this data by clicking **LSK 1R** next to **ZFW/ZFWCG**.

Then, enter 7 to transfer to **BLOCK** with **LSK 2R**.

As soon as the **BLOCK** is filled in, the title of the INIT page is replaced by **INIT FUEL PREDICTION**.

The FMS has calculated fuel consumption predictions, which will be refined later.

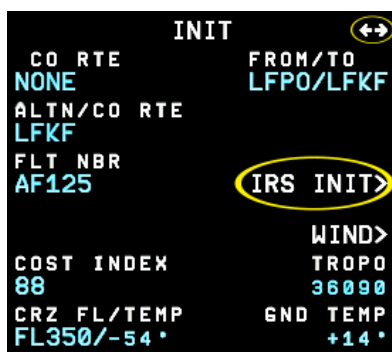
The following values are displayed in tons in the left column
(values in blue are editable):

1. **TAXI:** 0.2t
2. **TRIP/TIME:** 2.8 t flight duration: 1 hour 14 min.
3. **RTE RSV/%:** fuel reserve 0.1 t or 5%.
4. **ALT/TIME:** consumption and flight duration from destination to alternate airport.
5. **FINAL/TIME:** holding time at destination 1.0 t / 30 mn.
6. **EXTRA/TIME:** fuel reserve and additional flight autonomy 2.9 t / 1 hour and 29 min.

On the right column (data cannot be modified):

4. **TOW:** Takeoff Weight (calculated by the FMGC when the ZFW and Block are entered)
5. **LW:** Expected Landing Weight)

It remains to verify the IRS alignment on the IRS initialization page.



Access the IRS INIT page by pressing **LSK 3R (IRS INIT)** on the INIT page.

We will check this data against the current GPS position.

Display the co-pilot MCDU as a pop-up, place it next to the main MCDU, and navigate to the **DATA INDEX** page.

(press the **DATA** button on the MCDU keyboard).

Press the Line Select Key (**LSK**) **3L**, which is located next to the **GPS MONITOR** label.



On the GPS MONITOR page, we can see that the IRS coordinates and GPS coordinates match. The IRS alignment was successful, and no further action is required.

We are done with the copilot MCDU, so we can close the pop-up by clicking on it.

Active Flight Plan Programming.

Press the **F-PLN** page select key to open the main flight plan page.



We have on the left, in green (not editable):

LFPO (departure airport)

LFKJ (arrival airport).

Below, in blue (editable)

LFKJ (alternate airport)

Press **LSK 1L (LFPO)** to open the revision sidebar for LFPO (**LAT REV FROM LFPO**).



On the LAT REV FROM LFPO page,

<DEPARTURE will allow us to select a track (a SID), which we will enter later.

We will start by entering the entry point of our route, which is the **LUREN** waypoint. Enter **LUREN** in the scratchpad, then transfer it to the **NEXT WPT** line with the **LSK 3R**.



We arrive at the temporary flight plan page

FROM TMPY AF125 (AF125 being our flight number)

The temporary flight plan appears in yellow. The **LUREN** waypoint appears after **LFPO**.

Continue by clicking **LSK 3L (LUREN)** to open the **LUREN Lateral Revision** page and enter the rest of our flight plan.



Page LAT REV FROM LUREN

LUREN is the first waypoint of the route (A1).

You must indicate that you are going to fill in a route by clicking the **LSK 6R AIRWAYS** key.



Enter the name of the first airway, A1, in the scratchpad and transfer it to the **VIA** line using **LSK 1L**.

A second VIA line is displayed below A1.





The second route in our flight plan is **B37**.
Fill in the second VIA line in the same way.

The last waypoint of airway **A1**, **DJL**, and is automatically added.



Note: For airways, there are two options:

- Either enter the **end waypoint** of each airway in the **TO** field (e.g., DJL for airway A1), then enter the name of the next airway (e.g., B37), or
- Enter only the name of the next airway, since the intersection points of the airways are already stored in the FMGS database.

The result will be the same.



The third route in our flight plan is **J41**.

Enter the third VIA line in the same way.

The last waypoint of airway **B37**, **PAS**, is automatically added.

Press **LSK 6R TMPY INSERT** to transfer the temporary flight plan (yellow) to the main flight plan (green).



Main Flight Plan Page FROM AF125.

The main flight plan page is not tall enough to display all the lines. The arrows (↑↓) indicate that we can scroll up and down.

To display the lines below, click the ↑ arrow to scroll down the list.



Scroll to the last entered waypoint, **PAS**.

You will see that only waypoints are displayed.

There are many waypoints because each airway segment includes several waypoints stored in the FMGS database.

You will also notice the arrows (←→) at the top right of the screen, indicating that a sidebar is available. On the first page, the columns (**TIME, SP, ALT**) indicate the flight time to reach each waypoint, speed and altitude.

On the second page, the estimated fuel remaining, temperature and wind are shown.

We will now capture the following airways in the same way:

J41, UM730, Y24, UY24, M622.

Press **LSK 5L** (left of PAS) to open the **LAT REV FROM PAS** page.

Then press **LSK 5R AIRWAYS** to open the **AIRWAYS FROM PAS** page.



Enter successively, as before, the airways **J41, UM730, Y24, UY24**, up to the last one, **M622**.

The last waypoint of the **M622** airway is **DIVUL**, which must be entered manually in the **TO** line.



Enter **DIVUL** in the scratchpad, then transfer it using **LSK R** (to the right of M622).

Insert the temporary flight plan into the main flight plan by clicking **LSK 6R TMPY INSERT**.

We will now complete the flight plan with the **departure runway** and the **SID (standard instrument departure): runway 24, SID AGOP9F** (or the equivalent SID in effect on the day of your departure, as these are regularly updated).

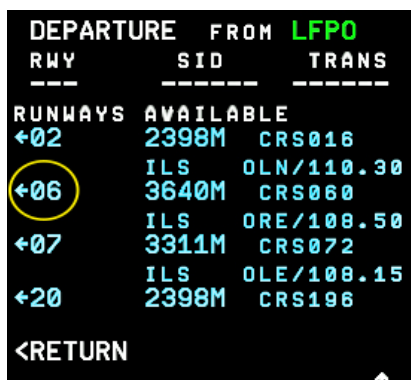
Open the main flight plan page by pressing the **F-PLN** page selection button at the beginning of

the flight plan, if necessary, using the arrow keys (↓↑).



Press **LSK 1LLFP0**,

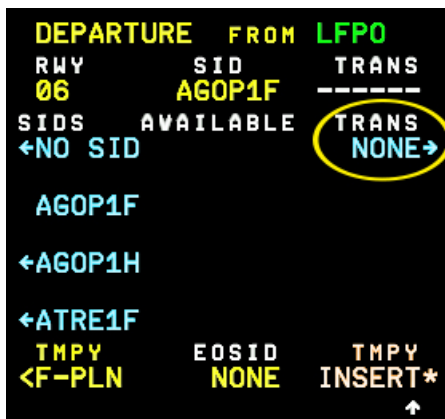
Then **LSK1L<DEPARTURE**.



Runway 06 selection:
Press **LSK 3L**.

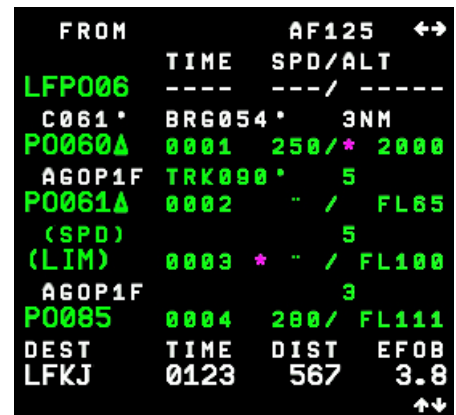
Then select **SID AGOPxx**, press **LSK 3L**.



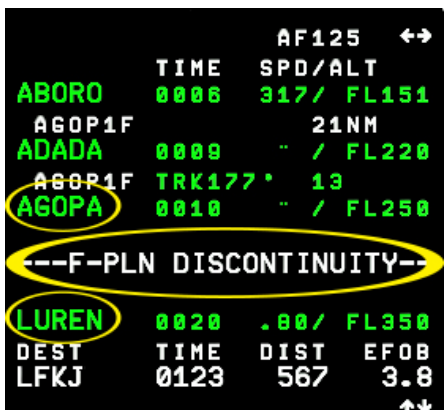


No transition: click **LSK 2R NONE**.

To finish, press **LSK 6R TMP INSERT** to transfer the temporary flight plan to the main flight plan.



Scrolling through the flight plan lines, you will see a discontinuity between **AGOPA** (the last waypoint of our SID) and **LUREN** (the first waypoint of our route, entry point of airway A1).



To remove this discontinuity:

- press the **CLR** key (bottom right of the MCDU keyboard)
- then click the **LSK** corresponding to the line
---F-PLN DISCONTINUITY---



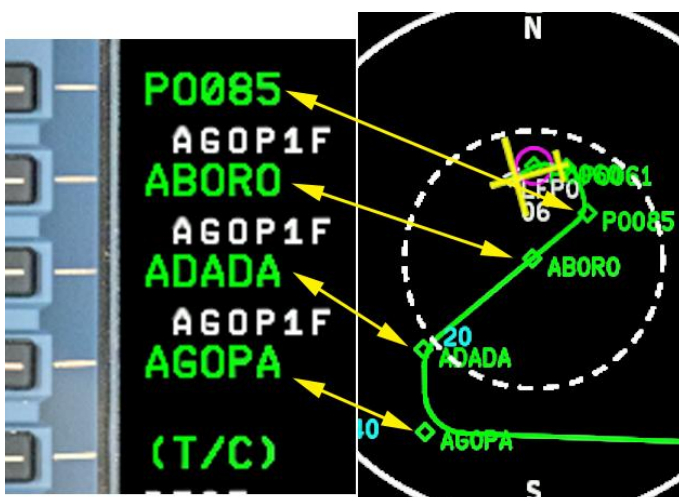
You can now view the entire main flight plan on the **ND** to ensure it contain no anomalies.



To do this, modify the display mode of the ND from **ARC** to **PLAN** mode.

Using the **range selector** (from 10 to 320 NM) you can adjust the display range of the ND.

It is recommended to place the **MCDU pop-up window** next to the **ND pop-up window**, which can be enlarged for better visibility.



ND and Flight Plan Visualization

The yellow cross represents our aircraft.

The center of the screen displays the second leg of the flight plan.

On the MCDU, scroll up through the steps using the **[↑] arrow**. Each time you scroll, the corresponding leg is centered on the ND, allowing you to visually follow your flight plan step by step until arrival.

Arrival Programming at Ajaccio (LFKJ)

To complete our flight plan, we still need to schedule our arrival at **Ajaccio LFKJ**.

For short and medium-haul flights, the expected runway and STAR are usually known in advance and can be adjusted later if weather conditions change during flight.

Landing data entry (Runway and STAR).



- Press **LSK 6L** to open the lateral revision page: **LAT REV FROM LFKJ**.



- On the **LAT REV FROM LFKJ** page, press **LSK 1R ARRIVAL**.



- On the **ARRIVAL AT LFKJ** page, the available approaches are displayed under **APPR AVAILABLE**.

The first listed is ILS02-Y 2429M (runway distance)

Heading 021 A/C 110.30 (ILS beacon frequency).

Select this approach using LSK 3L.



Then, in the STARS AVAILABLE column, scroll and select LONS1S (LSK 3L).

Then, choose NO VIA (LSK 3L) and TRANS: NONE.



Note: the STAR LONS1S may have changed by the time you perform this flight. If so, select the equivalent STAR currently available.



At the top of the ARRIVAL AT LFKJ page, you should now see:

APPR VIA STAR
ILS02-Y NONE LONS1S

TRANS: NONE (all in yellow, meaning temporary)

Validate this temporary approach by pressing the LSK 6R TMPY INSERT (amber).



On the flight plan page, scroll upward through the waypoints, a discontinuity appears between DIVUL (the last waypoint of the enroute portion) and LONSU (the first waypoint of STAR LONS1S).

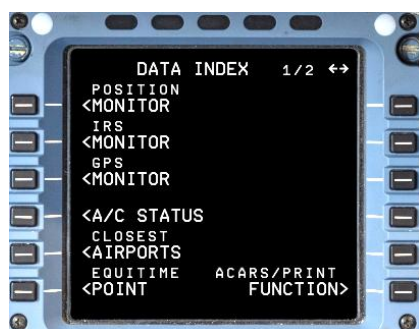
Remove the discontinuity by pressing [CLR], then the left LSK key corresponding to the discontinuity line.

Finally, press TMPY INSERT at the bottom right to validate. The complete flight plan now appears in green.



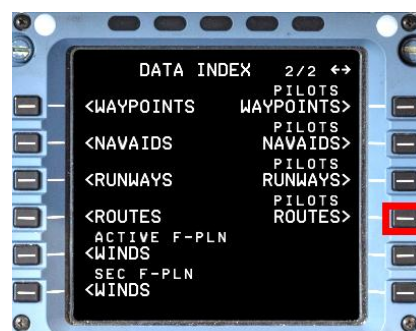
Saving the Flight Plan in the FMGS.

To save the active flight plan into the FMGS database, open the DATA page on the MCDU.



Press the right arrow (→) to display DATA INDEX 2/2.

Press LSK 4R
PILOTS ROUTES>
to open the NEW ROUTE page.



Enter the desired route name in the scratchpad (e.g., LFPOAF125) and transfer it to the CO RTE field with LSK 1L. Then, save by pressing LSK 2L STORE ACTIVE F-PLAN.



The next PILOTS ROUTE page now displays the saved route:
CO RTE: LFPOAF125
FROM/TO: LFPO/LFKJ
along with the route details
(e.g., LUREN A1 DJL UM730 PAS J41 VANAS etc.).

You can now view the flight plan page or another.

Note: Flight plan backup files are stored in the folder:
X-Plane 12 / Resources / plugins / ToLissFlightPlans / code_route.qpc
(in our case: LFPOAF125-001.qpc).

When saving a route, only route data (airways and waypoints) are stored. Runways, SIDs and STARs must be re-entered when reusing the route.



Once saved, the flight plan becomes available on the INIT A page.

When you enter LFPO/LFKJ in the FROM/TO field, the LFPO/LFKJ flight plan will replace the INIT page.

After reviewing the data, click LSK 6R INSERT,

To reject it, click LSK 6L <RETURN.

Programming a Secondary Flight Plan (Runway Change).

A runway change may occur shortly before departure. If you anticipate the runway in use, operation, it is useful to prepare a departure from that runway while still at the gate.

Note: In real operations, most pilots use the secondary flight plan to prepare an immediate return to the departure runway in case of technical issues or other emergencies.

Having the ILS frequency, return route, and landing performance preprogrammed help reduce stress in abnormal situations.

We will use this feature to plan a departure from runway 24.



To access the secondary flight plan: press the SEC F-PLN button on the MCDU.

Then, copy the active flight plan into the secondary one using LSK 1L ←COPY ACTIVE.



This is the easiest method, since most parameters (flight number, cost index, flight level), will remain identical, except for the departure runway and SID.

You can also program a completely different secondary route by pressing LSK 1R: INIT>.



The secondary flight appears in white.

Press LSK 1L (LFPO) to open LAT REV FROM LFPO, then LSK1L <DEPARTURE.



On the DEPARTURE FROM LFPO page: select Runway 24 (LSK L).

Then select the SID AGOPxx (LSK L).



Note: SIDs are regularly updated. You may not find SID AGOP9Q as shown here; choose AGOP1F or any current SID leading to AGOPA waypoint.



No transition is used, so click LSK 2R NONE →

The summary page displays in green:
RWY 24, SID AGOP9Q, TRANS NONE.

Press LSK 6R INSERT* to confirm.



The secondary flight plan page now shows the new runway: (24).

Scroll through the lines to check for discontinuities.



If you need to activate the secondary flight plan later:

Press SEC F-PLN,

then LSK 4L *ACTIVATE SEC.



Change the ND display mode: from ARC to PLAN.

Use the range selector (10 to 320 NM) to adjust the display (e.g., 80 NM).

The secondary flight plan departure route is now updated (runway 24). The ND now shows both departures: The primary flight plan in green and the secondary flight plan in white. Both routes converge at ADADA.

FMGS Performance Calculation.

With the lateral flight plan complete, we can now enter the takeoff performance parameters.

For takeoff performance, a performance calculator is included in the ISCS.

Access the PERF page on the MCDU, by pressing the PERF key.



This page contains six fields that must be filled before takeoff:

(three of them framed in amber, meaning mandatory).

Takeoff Speeds:

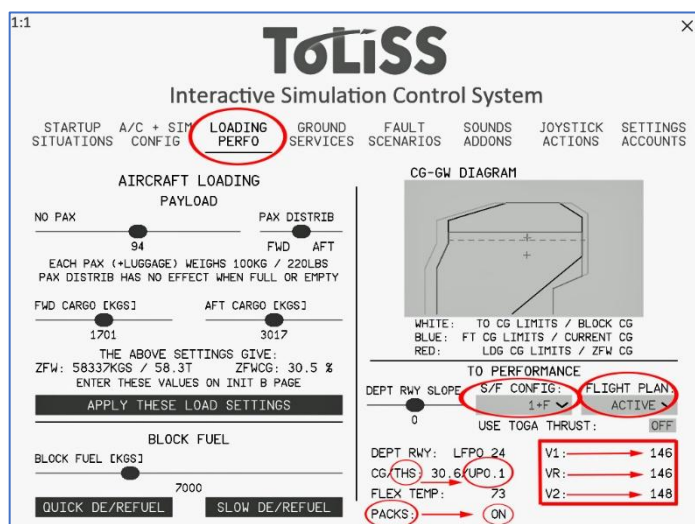
- ✓ **V1**: Decision speed.
- ✓ **VR**: Rotation speed.
- ✓ **V2**: Minimum safe initial climb speed.
- ✓ **FLEX TO TEMP**: Takeoff thrust temperature reduction. Use this to perform a reduced-thrust takeoff if runway length allows. Leave blank for full thrust.

- ✓ **FLAPS**: Takeoff flap configuration. This can be 1, 2 or 3 only.
- ✓ **THS**: Horizontal stabilizer (pitch trim) for takeoff.
- ✓ **TO SHIFT**: used if taking off from an intersection (e.g., 500 for 500m from the runway threshold). For a full-length takeoff, leave as 0 (M).

All of the above values are provided by the ISCS Takeoff Performance Computer.

Other parameters - TRANS(ition) ALT, THR RED/ACC (thrust reduction and acceleration altitudes), and ENG OUT ACC (acceleration altitude in case of engine failure during takeoff) are usually filled automatically.

The transition altitude is automatically derived from the selected SID.



Open the ISCS, go to the **LOADING PERFO** tab, and locate the **TO PERFORMANCE** section (bottom right).

Select the configuration:

S/F CONFIG (flaps/ slats): 1+F for takeoff, and **FLIGHT PLAN**: ACTIVE.

For mountain airports, a runway slope

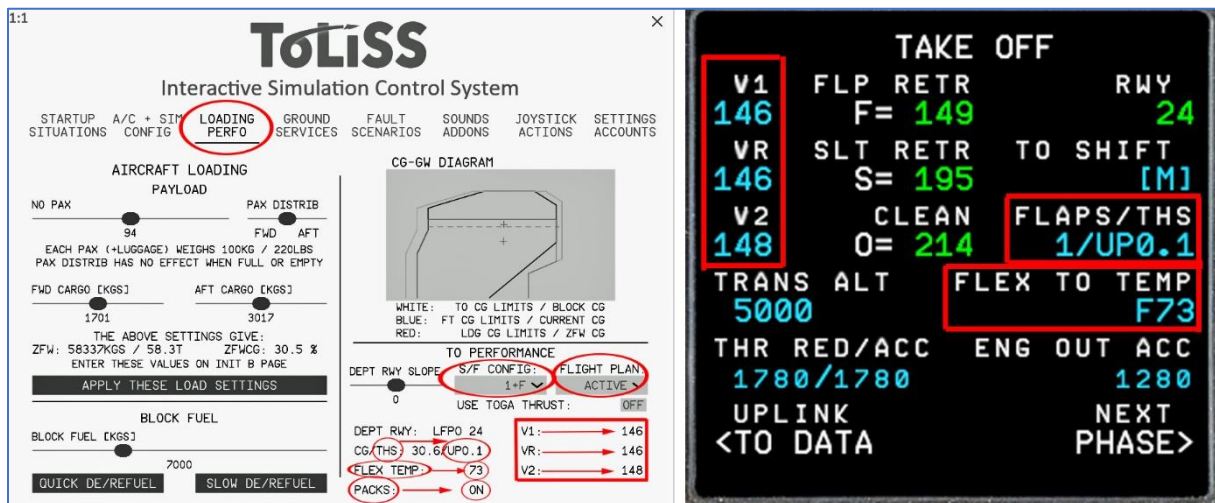
(**DEPT RWY SLOPE**) can also be set

For LFPO this is not necessary.

Takeoff Performance Calculation

Once the **slat/flap configuration** has been selected, the **Takeoff Performance Calculator (TO PERFORMANCE)** computes the appropriate data for takeoff. It automatically retrieves other relevant parameters, such as **runway length, aircraft weight, temperature, wind, and atmospheric pressure**, among others.

These data must be **manually transferred** into the MCDU.



The exact values may differ slightly from those shown in this example.



It is recommended to **copy the values displayed on your screen**, rather than using the figures shown here.

Note: Once **V1** and **V2** speeds are entered, they appear on the **PFD**, on the left side of the speed tape.

For **flap and THS (vertical stabilizer or trim)** adjustment: **the value before the slash** corresponds to the **flap/slat** configuration (only the flap setting is entered). The value **after the slash** corresponds to the trim position, preceded by the direction **DN (Down)** or **UP (up)**, followed by the numerical value shown in the ISCS. For example: 1/UP0.1.

Note: The **PACKS: ON** line in the ISCS TO Performance Calculator means that takeoff can be performed **with packs enabled**. Therefore, it is **not necessary to turn off the packs** before takeoff.

Close the ISCS; work with the TO Performance Calculator is now complete for the **main flight plan**.

Performance Calculation for The Secondary Flight Plan.

Since the **departure runway** was changed and a **secondary flight plan** was created, we must perform a separate the TO calculation for this new runway. Follow these steps to access the secondary **TO PERF** page.



1. Press the **SEC F-PLN** button on the MCDU to open the **SEC INDEX** page.
2. Then press **LSK 2R PERF >**.to open the **secondary PERF** page.
3. Open the **ISCS**, go to **LOADING PERFO** tab and in the TO Performance section, select the **secondary flight plan**.
4. Choose the **1+F** flaps/slats configuration.

There should be minimal differences between the takeoff performance results for both flight plans. The speeds **V1**, **VR** and **V2**, as well as the **FLEX temperature** and **THS** are generally identical.

Transfer the new values to the **SEC TAKE OFF PERF** page in the same manner as for the main plan.

The preparation of the **secondary flight plan** is now complete.

Preparing for Pushback and Taxi (Leaving the Gate)

Before leaving the gate, we must carry out the final pre-departure checks.

Barometric Reference (Altimeter Setting). The ATIS frequency for **LFPO ORLY** is **126.500 MHz**.



Make sure **VHF1** is selected on the **Radio Management Panel (RPM)**, located on the pedestal, beside the thrust levers.

- Use the rotary knobs to tune 126.500 in the right-hand frequency window of the RMP. The **large knob** changes the digits before the decimal point, the **small knob** changes the digits after the decimal point.

- Press the **double-arrow transfer button** to make this frequency ACTIVE. You should now hear the ATIS broadcast.



Set the **barometric reference** to **1013 hPa** (or according to your X-Plane weather settings).

Important: The barometric pressure must be set on **both the captain's and first officer's sides**, as well as on the **standby instrument**.



*Note: If you see **NAV BARO REF DISCREPANCY** (amber) and **BARO REF.....X CHECK** (blue) messages on the **E/WD memos** (Engine /Warning Display), the barometric settings are not synchronized, one side may be on **QNH** and the other on **STD**, or they may simply differ in value.*



Check that the **FD (Flight Director)** buttons are ON on both sides. Leave the **LS (Localizer/Glide Slope)** buttons OFF for now.

*Note: If the FD LED is on, pilots should reset the FCU by turning FD **OFF**, then **ON** again on to ensure no unwanted mode remains active.*



Set the **Navigation Display (ND)** to **ARC** mode and **10 NM** range.



Flight Control Unit (FCU) Status Check

The **SPD**, **HDG**, **LVL/CH** and **V/S** windows display dashes (-) in **managed mode**, and **numerical values** in **selected mode**.

ALT window always shows the selected the altitude.

In **managed mode**, the **SPD**, **HDG**, and **ALT** windows show a **dot indicator** (LED).

Rotary Button Logic: SPD, HDG and ALT act differently depending on whether you press or pull on these buttons:

- **Press (two-dot cursor)** : activates **managed mode** - the FMGS controls the aircraft.
- **Pull (one-dot cursor)** : activates **selected mode** - the pilot controls the aircraft via autopilot inputs (SPD, HDG, ALT).

Set the **altitude** to **5,000 ft** (assuming ATC clearance for initial climb).

Move the mouse  or  over the the **ALT knob**, scroll the wheel forward, to set **5,000**, then press the knob  to engage **managed climb**.

Note: The selected altitude must be **higher than the acceleration altitude**, otherwise the mode light will turn off.

Summary: button pulled  toward pilot: Pilot control (selected plane), button pressed  toward panel: FMGS control (managed mode).



Check the **loud speaker** volume near the PFD, set to approximately 7.

Adjust similarly on the first officer's side: the final audio output is a mix of both volume settings (left and right).



Verify that the **three green landing gear (LDG GEAR) lights** are illuminated.

Ensure the **A/SKIDS & N/W STRG** (anti-skid and nose wheel steering) switch is **ON**.

Transponder Setup

The **transponder** is located on the pedestal to the right of the thrust levers. Although we are not covering ATC in this tutorial, assume a **squawk code of 5576**.



1. Enter 5576 using the numeric keypad.

2. Set the **XPDR/TCAS mode switch** to **XPDR**.

3. Ensure **System 1** is selected and **Mode N** is active.

Note: TCAS should remain **OFF** until reaching the runway holding point, as TCAS emissions can interfere with ground radar systems.

System 1 is used by default (unless a failure occurs), because it remains powered in the **emergency electrical configuration**.

Now we can disconnect from external power and switch to the APU

Starting the APU (Auxiliary Power Unit)



1. On the **overhead panel**, press the **MASTER SW** button (APU master switch).

2. After **5 seconds**, press the **START** button (APU start switch).

Both buttons illuminate (ON).



Monitor the APU start-up on the **APU page** of the **System Display (SD)**.

If no other SD page is manually selected, the APU page will appear automatically.



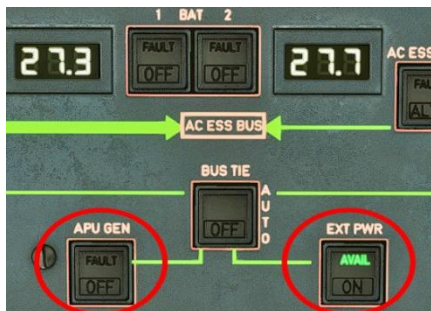
It takes about **20 seconds** for the **APU inlet flap** to open. The **APU N (rotation speed)** will then increase progressively until it reaches **100%**.

Once the start-up is complete, **APU AVAIL** appears in **green** on the **E/WD**, on the **APU page**, and also on the **overhead panel**.



At this point, we can **physically disconnect the external power supply**.

Transferring Electrical Power to the APU



First, check that the **APU electrical generator** is operating correctly, i.e., there is **no white OFF light** illuminated on the **APU GEN** button. If the **OFF** light is on, press the button to turn it off.

Press the **EXT PWR** button on the overhead panel.

The light changes from **ON** to **AVAIL** meaning that the aircraft is still physically connected to the external power source.

At this point, the aircraft is electrically autonomous. Request that **ground personnel disconnect the external power plug** from the aircraft.

Open the **ISCS**, go to the **GROUND SERVICES** tab, and in the **left column**, set **EXTERNAL POWER** to **OFF**.

The **AVAIL** indicator on the **EXT PWR** button will extinguish.

Change of Departure Runway.

We receive our **ATC clearance** for the flight.

As in real life, the assigned departure runway is **24**, not **06**.

Fortunately, we planned for this possibility. All we need to do is **transfer the secondary flight plan** into the **active flight plan**.



Press the **SEC F-PLAN** button on the MCDU to access the **Secondary Flight Plan INDEX** page.

Then press **the LSK 4L** (left side) next to ***ACTIVATE SEC**.



The **main flight plan** is now displayed in green. The **CHECK TAKE OFF DATA** message appears, reminding us to verify that the **V-speeds** have been correctly copied from the secondary flight plan. Clear this message using the **CLR** key.

Pushback Preparation

We are cleared for **pushback**. Since the aircraft will now be moving, **turn on the BEACON lights**. Set the **BEACON** switch on the overhead panel (**EXT LT** section) to **ON**.



Ensure that **all doors are closed**.

Press the **DOOR** button to display the **DOOR/OXY** page on the ECAM (center display).

If any doors remain open, open the **ISCS**, go to **GROUND SERVICES** tab, and in the **right column (bottom section)** select the relevant doors and set them to **CLOSE**.

Check the lights:

SEAT BELT: ON.

NO SMOKING: ON.

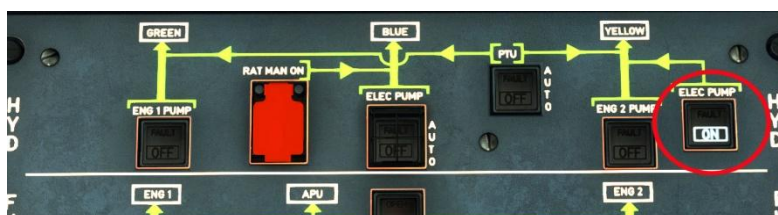


Before removing the **chocks**, ensure that the **parking brake** is set and **sufficient brake pressure** is available.

- Confirm the **parking brake** is engaged.



- Check the **brake accumulator pressure** and **brake pressure gauges**. The **accumulator pressure** should be about halfway between **0** and the **green mark**. With the parking brakes applied, both left and right brakes should show approximately **2000 psi**.



If the **parking brake pressure** is **zero**, start the **yellow electric pump** for **20 seconds** before continuing.

Open **ISCS** -> **GROUND SERVICES** and in the **left column**, set **CHOCKS** to **OFF**.

Activez l'alimentation

Make sure the **thrust levers** are in the **IDLE** position.

Starting the Door Exit Time Counter



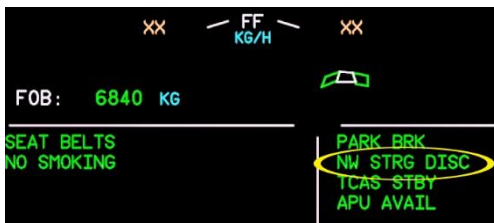
On the **main panel clock**, move the switch from **STP (stop)** position to **RUN**. The **Elapsed time (ET)** counter now starts.

Starting Pushback

Open **ISCS** in the **GROUND SERVICES** tab, then:

- move the **rotation slider** to the left,
- set the **distance slider** to **40 m**
- click **START AUTO PUSHBACK (NOSE WHEEL)**
- then **close ISCS**. (Recommended distance: 55 m; rotation: L -90°).

Note: Manual pushback [**MANUAL PUSHBACK (NOSE WHEEL)**] is also possible, though more difficult. Move **slowly** the **joystick pitch** controls pushback speed, and **joystick roll** controls the pushback tug's steering angle.



After a few moments, the pushback tug connects to the **nose gear**. You can confirm this connection when the **NW STRG DISC** memo appears in **green** on the **E/WD**.

Once the tug is attached (i.e., it has stopped moving), **release the parking brake**. Pushback begins.

In this tutorial, engine start is delayed until after pushback, but in real operations, engines may also be started during pushback.

When the pushback stops, the aircraft and tug come to a halt.

Set the parking brake.

The tug will disconnect and return to the gate. The **NW STRG DISC** memo will disappear from the E/WD.

Engine Start Procedure

To start the engines, **compressed air** is required. We will use the **APU** as the air source.



On the **AIR COND** panel (overhead), press the **APU BLEED** button; it will illuminate **blue**.



Set the **ENG mode selector** to **IGN/START**.

Note: Dual Cooling is **not available** on all aircraft.

Aircraft equipped with **CFM engines** do **not** have Dual Cooling; no associated buttons or indicators will appear on the overhead panel.



If available, enable **Dual Cooling** (bottom right of the overhead panel) to shorten engine startup time.

If a "**Dual Cooling Not Available**" message appears, no extra cooling is required; you may disable Dual Cooling again.

Start with **Engine 2 (right engine)**.



Move the **Engine 2 master switch** to **ON**.

If Dual Cooling is active, **Engines 2 and 1** will spool up to approximately **10% N2** for the **hot cooling cycle**.

Once both **cool-down timers** reach **0**, **Engine 1** slows down, and **Engine 2** begins its automatic start sequence.



Monitor engine start on the **ECAM** screens.

Wait until **N1** stabilizes around **19%** and the **AVAIL** box appears on the **N1 dial** for about **10 seconds**. This confirms that the engine has stabilized.



Repeat the same procedure for **Engine 1**:

Move its **master switch** to **ON** and monitor until start-up is complete.



After both engines are running:

- Set the **ENG mode selector** back to **NORM**.
- If enabled, turn **Dual Cooling OFF**.
- Press the **APU BLEED** button to turn it **OFF**.

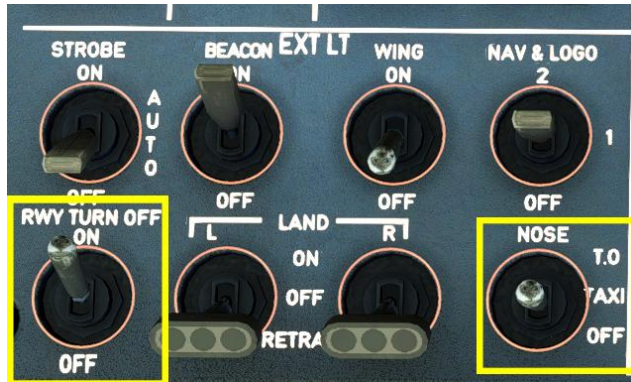


- Stop the **APU** by pressing the **MASTER SW** button.

Taxi Clearance

We have received **taxi clearance** and our assigned **transponder code**

Enter the code in the **ATC SYS** panel (lower right of the central pedestal).



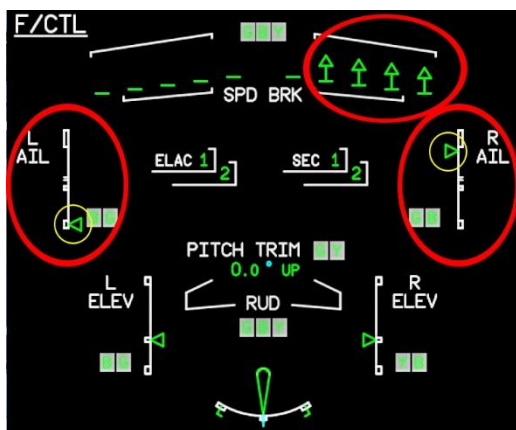
External Lighting:

- **RWY TURN OFF: ON**
- **NOSE: TAXI**

(Located at the bottom of the overhead panel in the EXT LT panel).

Release the parking brake.

Apply a slight thrust to get the aircraft moving. More than 30% N1 is not necessary.



While taxiing to runway 24,

Perform a brake check: press the brake pedals and check that the plane slows down.

Perform a flight control scan.

Check the system display (F/CTL page) to monitor the movement of all flight control surfaces.

The image opposite shows the deflection of the ailerons and airbrakes in response to a rightward deflection of the sidestick.

Note that moving the pedals while taxiing deflects the front axle. There is a control to disconnect the front axle steering from the pedals.



Arm the ground spoilers by pulling up the airbrake lever on the pedestal. A white stripe visible on the airbrake lever indicates that the airbrakes are armed.



Set the flaps to position 1+F.

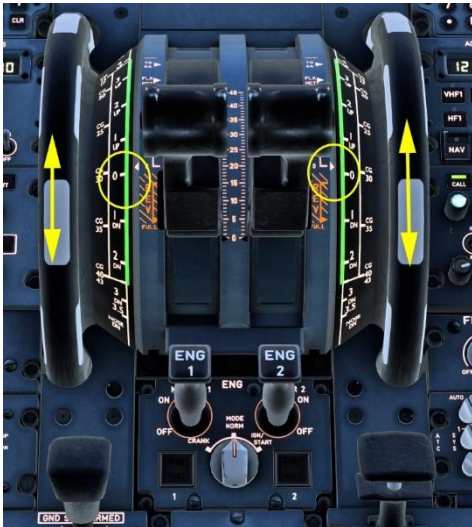
To do this, move the flap/slat lever (located on the pedestal) to position 1.

You can also use the X-plane command to extend the flaps one notch.



Ensure the **rudder trim** is centered (within $\pm 0.2^\circ$).

You quickly reset it using the **Rudder Trim Reset** button located between the **flap/slat** and **speedbrake** levers.



Set the **pitch trim** according to **Performance Calculator** (e.g., **UP 0.1°**).

Adjust by rotating one of the **trim wheels** on either side of the trim drum.

Check the trim value on the **trim position indicator** next to the thrust lever.



Set **AUTO/BRK** to **MAX**.

Confirm **A/SKID & N/W STRG** is **ON**.



Press the **TO CONFIG** button (on the pedestal, in front of the thrust levers).

Ensure the **T.O. MEMO** (in green) on the **E/WD** shows **no blue items** remaining.

If a **LOW OIL TEMPERATURE** message leave it displayed. It will disappear automatically as the oil warms up. Once cleared, you may proceed with takeoff.



If in the **TO Checklist**, you see the message:

CABIN (green) CHECK (blue)
it indicates the **cabin is ready for takeoff**.

Cabin Ready and Line-up

Press one of the **Purser Call** buttons on the **upper left panel** to obtain the **CABIN READY** message (green) on the **E/WD**.

We taxi the **holding point** of **Runway 24**.

Align the aircraft on the runway centerline and **come to a complete stop**.

Apply the **parking brake** and wait for **takeoff clearance** from the **control tower**.

Since we are departing from a **long runway**, performance is **not a limiting factor**

Therefore, it is **not necessary** to turn off the **air conditioning packs (PACK 1 and PACK 2)** before takeoff.

External Lighting Configuration:



- ✓ **STROBE** (anti-collision flashing lights): **ON**
- ✓ **RWY TURN OFF** (runway exit lights): **ON**
- ✓ **LAND** (landing lights): **ON**
- ✓ **NOSE** (front gear light): **TO**

TCAS Setup



TCAS: ON to permanently display the nearby aircraft on the ND. If set to **AUTO**, TCAS targets will only appear when **traffic (TA)** or **resolution advisory (RA)** occurs.

- ✓ **Mode: TA/RA**
- ✓ Display: **ABV** to show aircraft above the current altitude band.

Weather Radar Setup:



- ✓ **MULTISCAN: AUTO**
- ✓ **GCS: AUTO**
- ✓ **SYS: 1**
- ✓ **PWS: AUTO** (predictive wind shear)

The **PRED W/S STBY** memo on the ECAM will disappear once the system is active.

Takeoff and initial climb.

Taxi onto the runway and align precisely with the **runway centerline**.

Start the chronometer (on the glareshield, above the SIDE STICK PRIORITY indicator). The **chrono** display appear in the **lower-left corner** of the ND.

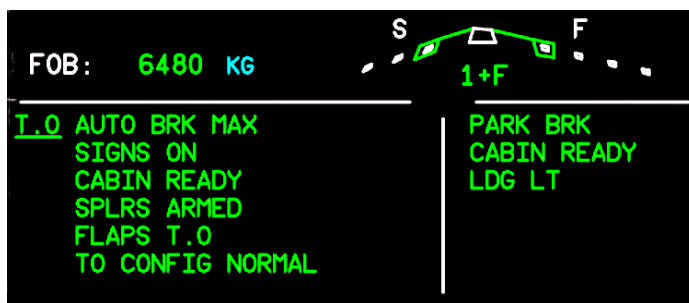
Final Checks Before Takeoff:



The **METRIC ALT** button displays altitude in meters on the **PFD**.

Check that dashes replace the speed and heading values on the FCU and that the three white dots are lit, confirming: "Everything is managed».

- Press the **CSTR** key to display **constraints** (speeds and altitudes) on the ND
- Ensure the **altitude window LED** is lit (only if the selected altitude is above the **acceleration altitude**).
- Verify the **A/THR** button light is **OFF** (it will illuminate automatically during takeoff).



- Confirm **slats and flaps** are set to **1 + F**, and that **all lines on the ECAM** are **green** (no blue item remaining).

Takeoff Procedure

To perform takeoff do not hesitate to pop up the PFD:



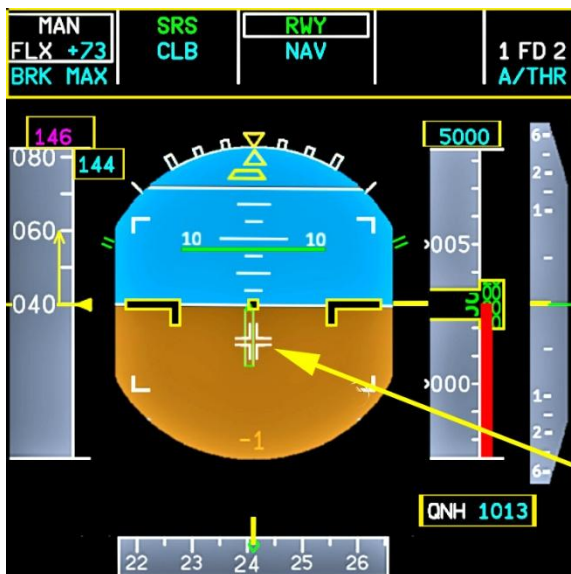
1. **Advance thrust levers** to approximately **50% N1** and wait for both engines to stabilize.

When stabilized (needle reaches the blue pinnule), release the brakes and smoothly move the thrust levers forward into the **FLEX MCT** detent.

*Note: most home throttles do not have physical detents like in the real aircraft. Adjust manually while watching the **FMA (Flight Mode Annunciator)** until it shows **MAN FLEX +73**.*

2. **Push the sidestick slightly forward** (about halfway) and hold until reaching **80 knots**. This maintains nose wheel pressure for directional control. The **T.O. INHIBIT** message (magenta) appears, indicating that all non-critical ECAM warnings are temporarily suppressed.

- Beyond 80 knots, gradually release forward pressure, returning the sidestick to neutral by 100 knots.



- Verify your **FMA** (Flight Mode Annunciator) matches the following example:

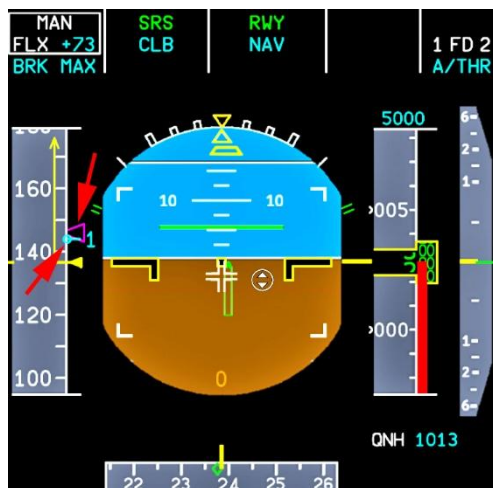
PFD Indicators:

- Speed tape (left):** V1 144 (blue), V2 146 (magenta)
- Altitude tape (right):** 5000 ft target altitude set in FCU
- White cross:** stick position indicator (pushed forward)

FCU: A/THR LED: ON

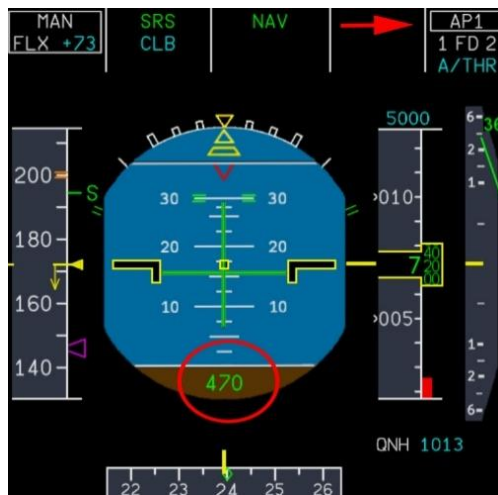
FMA:

- **Column 1:**
 - **MAN FLX + 73;** Manual reduced thrust takeoff (FLEX temperature 73°C).
 - **BRK MAX (blue);** Autobrakes armed (activated automatically if takeoff is aborted before V1).
 - **Column 2:**
 - **SRS (green);** Speed Reference System active; maintains minimum of V2 + 10 kt
 - **CLB (blue);** Climb mode armed.
 - **Column 3:**
 - **RWY (green);** Runway mode active, aiding directional control (if ILS data available).
 - **NAV (blue);** Navigation mode armed.
 - **Column 4:** empty (reserved for approach modes).
 - **Column 5:**
 - **1 FD 2 (white);** Both Flight Directors active.
 - **A/THR (blue);** Armed, not yet active.
- Maintain runway center line;** use small, smooth sidestick corrections to keep the **green cross** centered on the PFD).



- Blue "1": **V1**, decision speed takeoff can no longer be rejected.
- Blue **dot**: **VR**, rotation speed.
- Magenta triangle: target speed (V2)

6. At **VR** (Rotation Speed), identified by a **blue circle** on the speed scale, gently **pull back** on the sidestick and establish a **15° nose-up pitch**.



Once airborne:

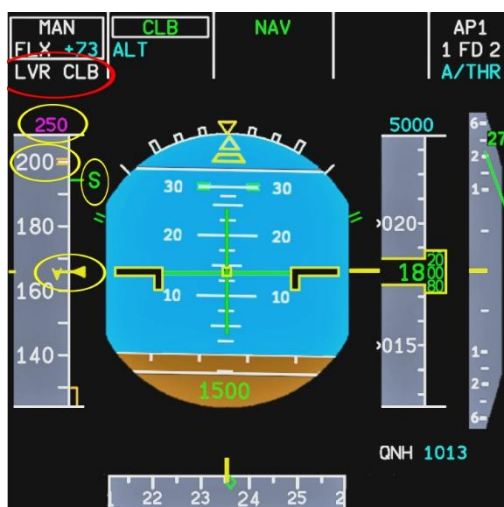
- **NAV mode (green)** engages automatically at **30 ft AGL** (above ground level) if a flight plan is loaded in the FMGC.
- Green **pointer**: indicates vertical speed **36** (3,600 ft/min).
- **Positive rate of climb**: announce "Positive climb", then **retract the landing gear**.
- After **400 ft AGL**, engage **Autopilot 1 (AP1)**.

Note: If altitude shows no value, you are already above 2,500 ft AGL (e.g., 470 ft AGL here).

On the FMA, **AP1 (white)** confirms autopilot engagement.

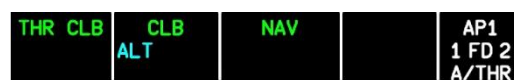
SRS and **NAV** remain green (active); **CLB** stays **blue** (armed).

Thrust Reduction and Climb



At **Thrust Reduction Altitude**, the message **LVR CLB** flashes in the first FMA column.

Move the thrust levers back to the **CLB detent**.



- FMA now shows **THR CLB (green)** for *Thrust Climb*.
- **A/THR** turns **white (active)**; the system now automatically adjusts thrust as needed (e.g., **SPEED** or **MACH** modes).

*Thrust can now be controlled by the **ATHR** between **idle** and **CLIMB** thrust.*

The **thrust levers** will remain in **CLB** for most of the flight unless manual thrust is required.

At **speed S** (or above):

- ✓ **Retract flaps** to 0
- ✓ **Disarm spoilers** (press the speed brake lever down; the white band disappears).
- ✓ **Turn off** the **NOSE** (nose gear) and **RWY TURN OFF** (runway exit) lights.

Target climb speed: **250 kt** (magenta) (below FL 100, per regulations).

We are now in **initial climb** towards **FL 130**, as cleared by the ATC.

Navigation Display (ND) Reading



The ND provide the following information during climb:

1. Yellow airplane symbol (current position).
2. Next waypoint (**in white**), following waypoints (**in green**).
3. **T/C (Top of Climb)** arrow, corresponding to the altitude set in the FCU (e.g., 5,000 ft).
4. **Magenta dot** indicates speed limitation (e.g., FL100).
5. **Next waypoint (P0271)** label.
6. **Magenta circle** indicates speed or altitude constraint (FL100).
7. **Green diamond** shows aircraft's current track.
8. **Vertical yellow line** indicates actual aircraft heading (if there is no crosswind, the direction and heading are the same).
9. **Speeds data:** GS (Ground Speed), TAS (True Air Speed), and heading vector.

In the **MCDU F-PLN** page:

FROM	UTC	AF125	↔
DER24Δ	1437	SPD/ALT	860
C236°	BRG235°	5NM	
P0246Δ	1439	246/	FL51
(SPD)	TRK210°	7	
(LIM)	1440	*250/	FL100
AGOP90		6	
P0271	1441	321/	"
AGOP90		11	
ADADA	1443	" /	FL150
DEST	UTC	DIST	EF08
LFKJ02	1602	578	3.4

- **DER24** appears in **green** (leg already flown).
- **P0246** in **white** (next active waypoint).
- **250 / FL100** limitation shown by a magenta asterisk.
- Waypoint data such as **distance**, **altitude**, and **time** are displayed.
- A **triangle** beside the waypoint indicates a fly-over fix (aircraft must pass overhead before turning).

Saving the Flight Situation

You may now **save the current situation** before reaching 5000 ft and name it: **LFPO INITIAL CLIMB**. This allows you to **resume the flight** later from the **initial climb phase**, without starting from the gate (see Chapter "Saving a situation" page 77).

The Tower instructs us to **bypass the SID** and go **directly to the waypoint LUREN**. This shortcut saves **time and fuel**.

To do this, we will now modify our **flight plan** via the **MCDU**:

1. From any page: Press the **DIR** function key (top left of the keypad).
-> The **DIR TO** page appears, showing the list of waypoints from the active flight plan.
2. Scroll through the list until **LUREN** appears.
3. Select **LUREN** by pressing the corresponding **LSK L (Left Soft Key)**.
4. On the MCDU, **LUREN** now appears in **yellow**, and the **page title** also changes to **yellow**.
5. On the ND (Navigation Display), the **new route** is shown as a **yellow dashed line**, overlaid on the existing green route.
6. Confirm the new routing by pressing **LSK 6R (DIR TO INSERT)** at the bottom right. The amber prompt turns green once confirmed.
7. The MCDU returns to the **F-PLN** page, and the **ND** now displays the **updated route in green**.

Climb Management to Cruising Altitude

We are still climbing toward the **target altitude of 5,000 ft** programmed in the **FCU**. At this point, there are two possibilities:

1. **Change the FCU altitude** to the cruising altitude (or to an altitude cleared by ATC) before reaching 5,000 ft.
2. **Maintain 5,000 ft** temporarily as per ATC instructions.

IF we **increase the target altitude** in the **FCU** (e.g., FL350):

- The **target altitude** on the **PFD** altitude tape changes accordingly.
- The aircraft continues climbing with **no change on the FMA** (still THR CLB and CLB).

***Note:** If the altitude is not changed (for example, ATC asks us to maintain 5,000 ft, or we simply forget), the aircraft will level off at 5,000 ft because the **FCU altitude always has priority**. Even if a higher cruise altitude (FL350) is entered in the **FMGS**, the aircraft will remain level.*



In this situation:

- On the **FMA**, **THR CLB** is replaced by **SPEED** mode (maintaining 250 kt) (constraint represented by the magenta color of the triangle).
- **CLB** mode disappears and **ALT** (altitude hold) becomes active.
- On the **PFD**, the top of the altitude scale no longer shows a target altitude; 5,000 ft has been reached.



Resuming the Climb

After maintaining level flight at 5,000 ft, we now wish to resume our climb.

1. Place the **mouse pointer** over the **ALT rotary knob** on the **FCU**. The pointer changes to indicate **pull (1 dot)** or **push (2 dots)** mode.

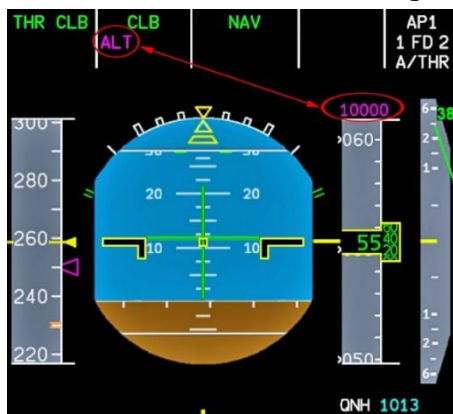


2. Rotate the knob **forward** to set a new altitude, for example **FL350 (35,000 ft)**.

- On the **PFD**, the new altitude appears in **blue**. However the aircraft remains level at 5,000 ft, because **managed climb mode** has not been re-engaged.
- On the **FMA**, the modes shown are **SPEED, ALT** and **NAV**, indicating that the **CLB** mode is inactive.

On the **FCU**, the **LED** next to the altitude window is **off**.

3. To re-enter **managed climb mode**, press the **ALT** knob. The **LED** illuminates, and the aircraft resumes climbing toward **FL350**.



The **FMA** now shows:

- **THR CLB, CLB** and **NAV** (green- active modes).
- **ALT** (blue; armed mode).

Note: If the full **SID** was flown without a **DIR TO**, the **FMA** may display in **magenta** an altitude constraint (e.g., 10,000 ft at waypoint **PO271**). Otherwise the **FMA** will display as before.



Transition Altitude

When passing the **transition altitude**, the barometric setting on the **PFD** flashes (e.g., 1013).

Press the **BARO** knob on both sides (Captain, F/O, and standby instrument) to set **Std** (standard pressure).

Std now appears in **blue** on the lower right of the **PFD**.

If the change is made on only one side, **ECAM** will show the following memo:

- **NAV BARO REF DISCREPANCY** (amber)
- **BARO REF...X CHECK** (blue)

Continuing the Climb

The aircraft continues climbing toward **FL350**.

When the altitude was first set on the FCU, the MCDU scratchpad displayed the message: **NEW CRZ ALT 35,000**. You may clear this message using the **CLR** key.

At **10,000 ft**:

- ✓ Turn **LAND lights OFF**.
- ✓ Turn **SEAT BELTS OFF**.
- ✓ On the ND, press **ARPT** to display nearby airports.
- ✓ The **250 kt limit** disappears and the aircraft accelerates to the managed climb speed (shown as a target on the PFD).

Temporary track Deviation

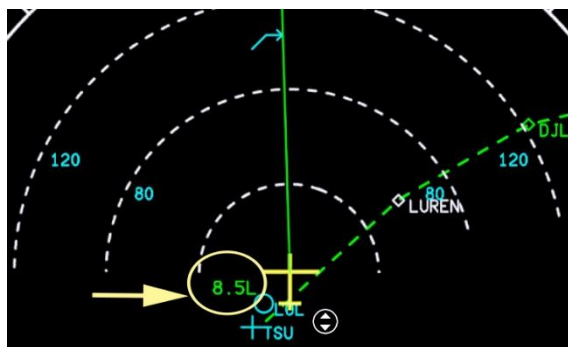
ATC instructs us to **turn left to heading 070**.

1. Place the mouse pointer  or  on the HDG knob and set the heading to **070**.
2. Pull  the HDG knob to engage **selected heading mode**:

THR CLB	OP CLB ALT	HDG		AP1 1 FD 2 A/THR
---------	---------------	-----	--	------------------------

- The **FCU LED** turns off.
- The **FMA** (column 2) now displays **OP CLB** (Open Climb) in green.

Note: Managed CLB mode is only available if **NAV mode** (lateral managed navigation) is active. In selected lateral mode, **OPEN CLB** automatically engages, and altitude/speed constraints are ignored.



The **ND** now displays:

- The current route (solid green line).
- The programmed route programmed in the FMGS (dotted green line).
- The lateral offset in NM compared to our planned route (e.g., 8.5L = 8.5 NM left of the course).

When reaching about **20 NM offset**, ATC instructs us to **turn right at heading 170** to intercept the route again.

1. Set HDG 170 as before.
2. Press the HDG knob  to arm **NAV** mode.

The **FMA** now shows:

THR CLB	OP CLB ALT	HDG NAV		AP1 1 FD 2 A/THR
---------	---------------	------------	--	------------------------

- **HDG** (green), active
- **NAV** (blue); armed



The ND now displays:

The interception point with our programmed route.

The route itself appears as a dashed line up to the INTCP point.

Important: Verify that the next waypoint displayed in the upper right corner of the ND corresponds to the waypoint displayed on the route, in this case LUREN.

If the waypoint displayed in the upper right corner does not match, you will need to check the F-PLN page of the MCDU and delete the waypoint(s) before LUREN.

Once we rejoin the programmed route after the left turn, the FMA will show NAV in green in the third column (managed lateral navigation).

However, the FMA still shows in the second column **OP CLB** (green; active).

To return to **managed climb**, push the ALT knob  again.

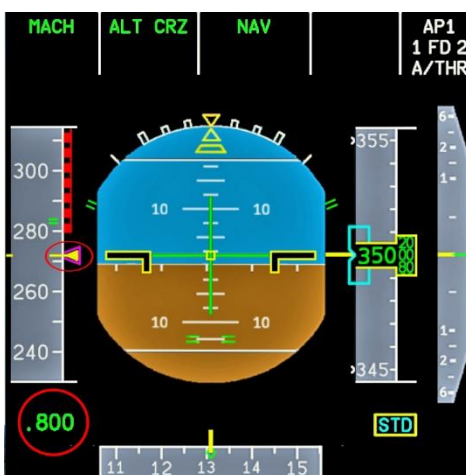
The FMA now displays: **CLB (green)**; managed climb active.

The aircraft continues climbing toward **FL350**.

At **FL250**, the **FCU speed window** switches from **IAS (knots)** to **MACH**.

Approaching Cruise Altitude

The FMA frames **MACH** and **ALT CRZ** with white borders.



On the PFD, the **yellow altitude frame** flashes briefly.

The **blue altitude target box** descends, indicating capture.

When stabilized at **FL350**:

- FMA shows **MACH**, **ALT CRZ** and **NAV** (green).
- In the fifth column, all active systems appear white.
- Below the speed tape, in MACH number is displayed.

You may checked it on the FCU:

- **Pull** the SPD knob  to view selected Mach.
- **Press** the SPD knob  to return to **managed speed**.



ON the PFD, the **magenta triangle** (target) coincides with the **yellow triangle** (actual speed).

Important: On the FCU, the altitude LED turns off once at cruise. To change altitude, **press** the ALT knob  to activate managed mode or pull the  button to activate selected mode.

Recommendation: Save the flight at this stage and before each new flight phase, to facilitate training and avoid restarting from the beginning (see page 77: Saving a Situation).

Cruise Phase Review

The aircraft is now stabilized at **cruising altitude**, and the **autopilot** manages vertical and lateral navigation automatically. In real operations, however, ATC and weather often require further adjustments of heading, altitude, or speed.



The **ND** (Navigation Display) (range set to 160 NM) displays the flight path as a **solid green line** with **waypoints**:

- **Next waypoint (IBABA):** white
- **Following waypoints:** green

The **green circle** is called the **Equitime Point (ETP)**, also known as the Equal Time Point. It represents the position along the route where the time required to continue to the destination airport (LFKJ) is exactly the same as the time needed to return to the departure airport (LFPO).



The progress of the flight can be monitored on the **MCDU F-PLN** (Flight Plan) page, which continuously displays position updates and estimated times for each waypoint.

MCDU Data During Cruise F-PLN Page

- Left column: waypoints and airways.
- Center: estimated arrival times,
- Right: altitude (FL) and speed.
- Bottom: destination **LFKJ RWY 02**
- **ETA 18:22**
- Remaining distance **356 NM**
- Estimated fuel at destination **3.9 t**

MCDU PERF page (CRZ phase)



- Cruise speed mode: **MANAGED**
- Cost Index: **73**.
- Target managed speed: **.80 mach**.
- Estimated Time Arrival: **18:22**.
- Top of descent (T/D) UTC **18:00**
- **EF08: 3.9 t** (Estimated Fuel On Board at destination)
- Top of descent (T/D) **236 NM**:



PROG page

- Blue: current flight level (FL350)
- Green: optimal level (FL375)
- Magenta: maximum level (FL390).

Skipping Ahead

You may shorten the cruise phase using the ISCS functions:

JUMP TO NEXT WPT or **JUMP 200 NM** (see page 78).

Note: When resuming a saved situation, all aircraft systems (fuel, flight plan, automation) are synchronized as if the flight had continued normally.

Cruise Flight

We could let the autopilot continue the programmed flight plan, but we will now test several **fictitious scenarios** to better understand the Airbus A320 systems.

Ascent modes.

ATC now requests a **climb to FL370**.

1. Set the altitude in the **FCU** to **37,000 ft**.
2. Three climb options are available:

- **Managed Climb**

Press the **ALT** rotary knob  (the dashes and LED illuminate).

Managed climb can only be activated if **NAV mode** (lateral navigation) is active.

In this mode, the aircraft follows the programmed flight plan and respects all **speed and altitude constraints**.

The FMA displays **CLB** in green (managed climb mode active).

Upon reaching **FL370**, the LED turns off, and the aircraft levels off.

- **Selected Open Climb (OP CLB)**

Pull the **ALT** rotary knob .

The aircraft climbs in **selected climb mode**, with the **altitude displayed on the FCU** (LED off).

Altitude and speed constraints are **not respected**.

The FMA displays **OP CLB** in green (open climb mode active).

- **Selected Climb EXPED (Unmanaged)**

Press the **EXPED** button located below the **ALT** knob (the button lights up).

The aircraft climbs at the **maximum rate of climb**.
Altitude and speed constraints are **not respected**.
The FMA displays **EXP CLB** in green.

- **Selected Climb VS or FPA (Vertical Speed / Flight Path Angle) (not managed).**
The pilot manually controls either the **VS climb rate**, or the **FPA climb angle**, selectable via the **HDG TRK / VS FPA** button.

In all cases the FMA displays **ALT** in blue until the aircraft reaches the altitude programmed on the FCU.

On MCDU, the message **NEW CRZ ALT 35,000** appears; erased it using the **CLR** key.

Descent modes.

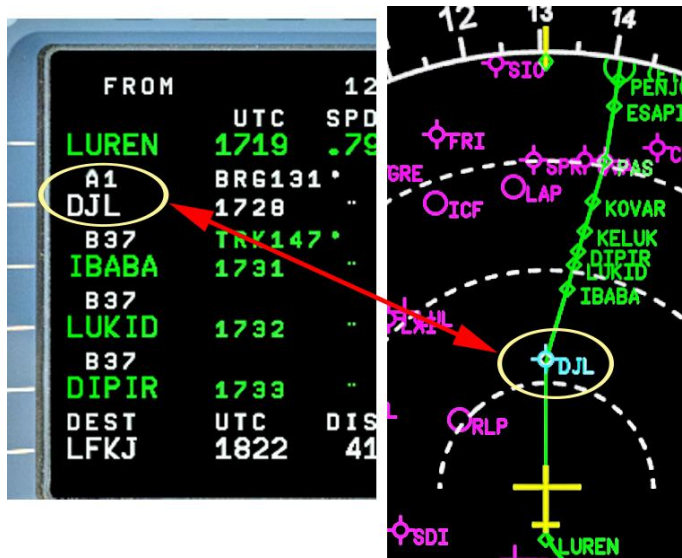
- **Managed descent**
Press the **ALT** button 
Managed descent can only be activated if **NAV mode** (lateral mode) is active.
This mode respects all altitude constraints defined in the flight plan.
The aircraft descends in **managed mode** (dashes and LED).
The FMA displays **DES** in green (descent mode active).
When the target altitude is reached, the LED turns off, and the aircraft remains level.
- **Selected descents.**
The same principles apply for **OP DES (Open Descent)**, **EXPED** and **VS /FPA** modes.
In these modes, **altitude and speed constraints are not respected**.

Deleting and Adding a Waypoint

Open the **MCDU flight plan page** by pressing the **F-PLN** button.

1. **To delete a waypoint:** press the **CLR** key, then select the **LSK** key to the left of the waypoint you want to delete. The deletion occurs immediately **without confirmation**.
2. **To add a waypoint:** type the name of the waypoint in the **scratchpad**, then press the **LSK** key beside the waypoint **before which** you want to insert the new one.
A **temporary flight plan** is then created and displayed as **yellow dotted lines** on both the **F-PLN** page and the **ND**. A **discontinuity** is also automatically inserted.

Note: we cannot add a waypoint on the **current leg** (displayed in white), you can only insert waypoints in the **upcoming segments** (displayed in green).



Example: we have reached cruising altitude, and **DJL** is our next waypoint. The information displayed on the MCDU and ND match.

Let's add the ICF waypoint after DJL.

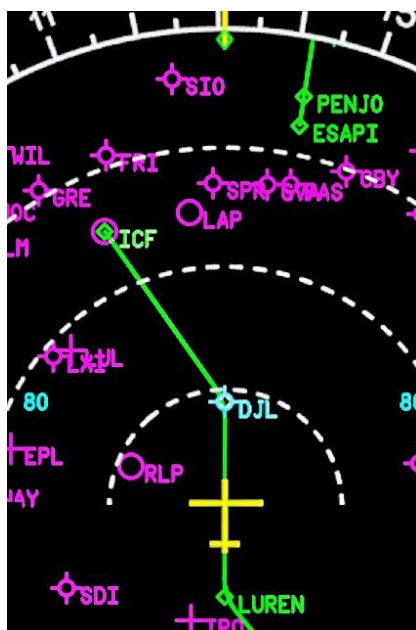
Type **ICF** in the scratchpad. If multiple ICF waypoints exist worldwide, a **DUPLICATE NAMES** page appears, listing all possible options.

Select the **first one**, which is closest to your current position.

FROM	TMPY	125	↔
	UTC	SPD/ALT	
LUREN	1719	.79/ FL343	
A1	BRG131	43NM	
DJL	1728	/ FL348	
C095	TRK095	70	
ICF	1737	/	
---F-PLN DISCONTINUITY---			
IBABA	1744	/	
TMPY		TMPY	INSERT*
←ERASE			↑↓



A **temporary flight plan** is now created and displayed in **yellow** on the **F-PLN** page, with the **DJL-ICF** segment added on the **ND** (in yellow dotted lines).



If we remove the discontinuity at this stage, the next waypoints after ICF will be **IBABA, LOKID**, and others that follow. However, this would cause the aircraft to **turn back** to intercept **IBABA**.

To avoid that, use the **CLR** function key to delete the waypoints from **IBABA onward up to and including PAS**.

After validating the temporary flight plan by pressing the **TMP INSERT** key (bottom right of the MCDU), the flight plan will now include a **discontinuity after ICF**.



Once that discontinuity is removed, the modified flight plan continues from **ICF** directly to **ESAPI**.

Note: Lateral navigation mode remains **NAV (managed)** throughout.

Alternative method: After adding ICF, you can simply wait until you pass (or approach) ICF, then use the **DIR TO** function to proceed directly to **ESAPI** or **PENJO**.

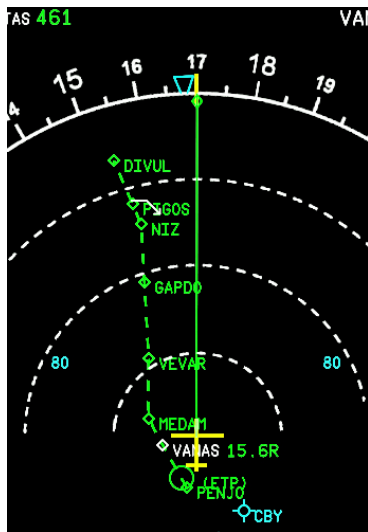
At this point, we are approximately **250 NM** from our **destination**.

You can perform a **situation backup** using the **ISCS**. Name the backup something clear and descriptive, such as **"250 NM DE LFKJ."**
This will allow you to later reload the same situation for a different approach scenario.

Deviation by Heading (Selected HDG Mode)

Another simple way to bypass a specific area (such as weather or traffic) is to **change heading in selected HDG mode**, then rejoin the route afterward.

This method is more flexible since it does not rely on waypoint modifications.



After **PENJO**, set the **heading to 170°**, then **pull** the **HDG knob**  to activate the **selected heading mode**.

The **FMA** displays **HDG** in green.

Our new track is now **parallel** to the programmed flight plan (shown as **green dotted lines** on the ND).

Press the **HDG button**  to **arm NAV mode**.

The **FMA** continues to display **HDG (green)** for the active mode and **NAV (blue)** for the armed (not yet engaged) mode.

The **MCDU** displays **NO NAV INTERCEPT** since we are no longer on the programmed route. Clear this message using the **CLR** key.



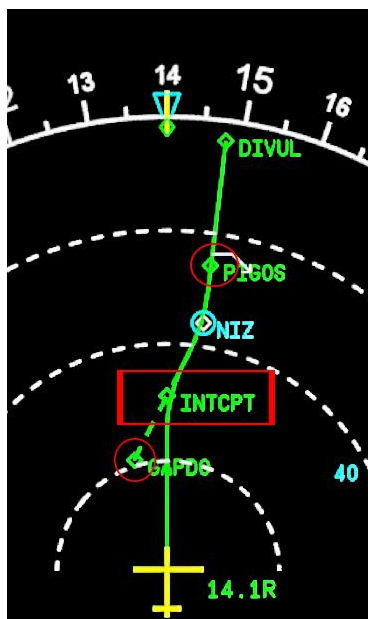
After **VEVAR**, turn left to a **heading of 140°**.

This trajectory intercepts the original flight plan.

However, the **FMGS** still considers **VANAS** (in white) as the next waypoint in the **MCDU Flight Plan page**.

The ND confirms that we are **moving away from VANAS** by showing increasing distance.

As before, delete all waypoints up to **GAPDO** with the **CLR** key. Otherwise, after crossing the route, the aircraft would continue straight ahead.



Once those waypoints are deleted, the ND displays our route as a **solid green line**.

The interception point with the programmed route lies between **GAPDO** and **PIGOS**, marked **INTCPT**.

When the aircraft reaches this point, it automatically returns to **managed lateral mode**; the FMA shows NAV in green.

The ND then displays **NIZ** as the next waypoint (upper right corner).

***Note:** If the MCDU displays the message **SELECT HDG/TRK FIRST**, refer to **page 63**.*

Approach Phase Data Entry: MCDU APP

This approach data is provided by the ATIS of LFKJ.

Open the **MCDU PERF** page; we are currently in the **CRZ** phase.



At the bottom left, **ACTIVATE APPR PHASE** (in blue) allows **immediate activation** of the approach phase, but **we will not activate it yet**.

At the bottom right, **NEXT PHASE** allows access the **DES** page and then the **APP** page, enabling us to enter approach data **without activation**.

Data Entry



Left column:

- **QNH:** 1017
- **Ground temperature:** 18° (Ajaccio)
- **Wind:** direction and speed (not given here, as wind is calm).
- **Transition level:** FL50
- **Approach speed (VAPP):** 133 kt; adjustable
VAPP = VLS (minimum selectable speed) + 5 to 15 kt, depending on surface wind.

Right column:

- **RADIO:** 50 (for automatic ILS landing)
- **Configuration:** FULL / CONF3.



Do **not activate** the approach phase yet, since we are still in **CRZ** phase. We will first transition to the **DES** phase. Press the **LSK PREV PHASE** key twice to return to the **CRZ** page.

Notes:

- The approach phase will **be automatically activated** at the latest when passing the **deceleration point** (shown as a **magenta "D" inside a circle** on the ND).
- In practice, it often activates earlier, typically when switching from **STD** to **QNH** on the barometric setting during descent.

- If being guided by ATC, you may no longer be in **managed lateral mode** and may not fly over the deceleration point. In that case, **manually activate** the approach phase:
 - Select **Activate APPR Phase**, then **Confirm APPR Phase** in the **DES** page
 - During ATC guided approaches, **speed and altitude** are usually in **selected mode**, since controllers often issue specific restrictions for both.

Note: The destination's METAE is displayed in the ISCS LOADINF PERFO tab.

The descent and the approach.

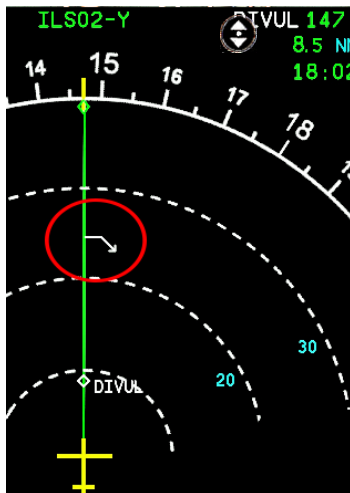
We are now approaching **NIZ**; the next waypoints are **GIGOS** and **DIVUL**, the last waypoint on our programmed route.

At approximately **180 NM** from our destination (**LFKJ**), if the destination data has not yet been entered, the **MCDU** will display the following **amber message: ENTER DEST DATA** this is a reminder that the approach parameters must now be entered in the **APPR** page.

We have nearing the **T/D (Top Of Descent)** point. It is time to prepare for descent

Setting the Target Altitude

In the **FCU**, set the **target altitude** to **10,000 ft** (or another appropriate altitude of a next waypoint). Do **not** push  or pull  the **ALT** knob yet if you wish the aircraft to **maintain level flight**; the **FMA** will continue to display **ALT CRZ**.



When the aircraft reaches the **T/D**, symbolized by a **white arrow** on the **ND**, press the **ALT** knob  to **activate managed descent mode**. The aircraft will then follow the programmed **vertical profile** automatically.

Notes:

If you activate descent **before the T/D**, the aircraft will smoothly intercept the descent path. On the **altitude tape**, a **green dot** will appear, indicating the difference between the current altitude and the theoretical descent path.

If we had **pulled the ALT button** , we would now be in **OP DES (Open Descent)**, a selected mode in which the aircraft descends without following the programmed descent path or respecting speed and altitude constraints.

In this mode, the descent is performed at **IDLE thrust** and at the **selected speed**.

In real world operations, we **never follow the FMGC descent profile exactly**; it is a purely **theoretical reference**. In practice, **ATC provides altitude clearances** to maintain or reach, and we may request a descent, but always to a specific **altitude or flight level**.



If we **press the ALT button**  either **before or after the T/D**, the aircraft will rejoin the **descent profile** automatically.

A **green dot** on the **PFD altitude scale** indicates the deviation between the aircraft's actual altitude and the vertical path computed by the **FMGC**.

In this example, the **green dot** is **below the yellow line**, which means the aircraft is below the theoretical path and must climb to rejoin it.

We continue our descent, while monitoring on the **MCDU F PLN** page, that:



- Altitudes at each waypoint are respected, and
- The **FCU target altitude** is set **below** the altitude of the next waypoint; if we are in "fully managed" mode, (which, in real operation is rare).

On the **ND** constraints are displayed as follows:

- A **magenta circle** indicates a **speed or altitude constraint**.
- A **magenta dot** indicates a **speed constraint only**.

Note: In actual operations, these constraints are often **not strictly followed**, as **ATC** typically assigns speeds and altitudes based on real-time traffic management.

For the purposes of this **tutorial**, however, we will follow the **FMGS descent profile**.

Managed Descent

In managed descent, the **FMGC** allows a deviation of **±20 knots** from the **target speed**. Here, the **target speed** is **310 kt**, indicated by the **magenta triangle**, while the **actual speed**, shown by the **yellow triangle**, is slightly below that target.



The **maximum** and **minimum** speeds are marked on the speed scale by **magenta bars** (e.g., 330 kt and 290 kt).

If **ATC** instructs a **speed reduction**, simply select a lower speed on the **FCU** and pull the **SPD** knob.

The selected target speed is then represented by a blue triangle.



***Note:** The **selected speed mode** is fully **compatible** with **NAV** (lateral managed) and **DES** (vertical managed) modes, which remain **active in green** on the **FMA**.*

The Holding Pattern.

We will now create a **holding pattern** at **SIRSA**.

1. Open the **MCDU F PLN** page.
2. Open the **SIRSA waypoint** side menu by pressing the **LSK** to the left of **SIRSA**.
3. Select the **HOLD** page by pressing **LSK 3L**.
4. The **HOLD AT SIRSA** page appears. Initially, the parameters for the **holding fix** are blank.
5. Press **COMPUTED (blue)** to automatically generate a **default holding pattern**, using the inbound course of the waypoint (**INB CRS**) and a **right-hand turn (TURN R)**. The default holding time (**TIM/DIST**) is **1 minute** below **14,000 ft**, and **1.5 minutes** above.
6. The **COMPUTED HOLD AT SIRSA** page is displayed with **yellow entries**, indicating **temporary mode** (modifiable before validation).
You may change the turn direction (**TURN L**) or modify the time/distance of the hold. Only **one unit** (time or distance) can be entered — entering both (e.g., 1.00/8) will trigger a **FORMAT ERROR** message.
7. Press **TMPY F-PLN (LSK 6 L)** to create a temporary flight plan, then confirm **TMPY INSERT (LSK 6 R)**.

The **F-PLN** page now displays: **SIRSA** waypoint, then **HOLD R** then **SIRSA** again.

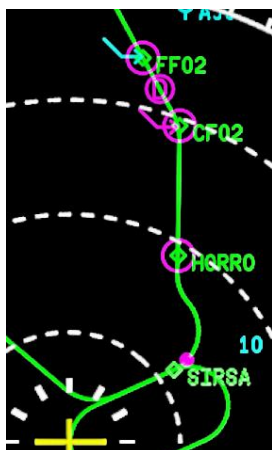
***Note:** If any hold parameters were modified, you can revert to the default by reopening the **HOLD** page and pressing **COMPUTED (LSK 1R)** again.*

Passing 10,000 Feet

When descending through **10,000 ft**:

1. Set **LAND lights ON**.
2. Set **SEAT BELTS ON**.
3. Display **constraints (CSTR)** on the **ND**, and enable **LS** on the **PFD** (for ILS display).
4. Reduce the **ND range** to **40 NM** (or as desired).
5. **Activate the APPR phase** on the **MCDU**.
6. If currently in **managed speed mode**, pull the **SPD knob** to enter **selected speed mode** and manually control descent speed.

Upon reaching **SIRSA**, the aircraft will automatically **enter the holding pattern** (right turns).



To **exit the hold**, press **IMM EXIT (LSK 3 R, amber)**.

To **cancel** the exit, and **resume** holding press **RESUME HOLD**.

Transition Altitude

We are now approaching the **transition altitude**, in this example **5,000 ft** (although this varies by airport).

When **STD** begins flashing in the lower-right corner of the **PFD**.

Press the **baro knob** on both the **captain's** and **first officer's** sides, as well as on the **standby instrument**, to switch from **STD** to **QNH** mode and synchronize the altimeters.

ILS Alignment - Runway 02.

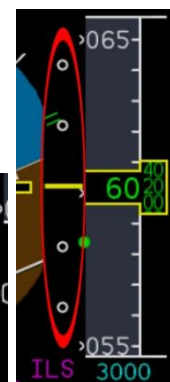
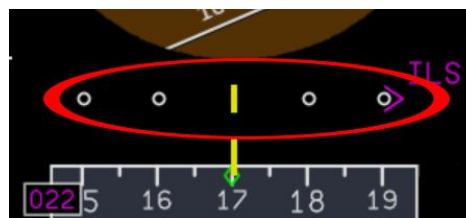
As the aircraft decelerates and approaches the **runway centerline**, we must arm the **ILS approach mode** on the FCU. This **approach function on the FCU** is **not the same** as the **approach phase on the MCDU**. The **MCDU approach phase** remains in **DES phase** unless it has been manually activated earlier.

1. Verify that the **LS button** is **illuminated**, which ensures **ILS guidance** is displayed on the PFD.



Glide: Vertical guidance (shown to the left of the altitude scale on the PFD).

Localizer: Lateral guidance (displayed at the bottom of the PFD).



2. Press the **LOC button** (below the HDG knob) on the FCU the light should illuminate.
3. The **FMA** displays: NAV (active green), LOC (armed blue) the localizer is not yet intercepted.
4. When **LOC** turns **green with a star**, the localizer is being intercepted.
5. **LOC** in **solid green** indicates the **localizer is captured** the aircraft is aligned with the runway centerline.
6. Press the **APP button** (below the FCU altitude selector).
7. The **FMA** displays: G/S in **blue** (armed, not active).
8. When **G/S** turns **green with a star**, the glide path is being captured.
9. **G/S** in **solid green** means the **glide path is captured** the aircraft begins a controlled descent on the ILS.
10. Engage **AP2** to activate the second autopilot, enabling "**Autoland**" the aircraft will complete an automatic landing.
11. Switch back to **managed speed mode** by pressing the **SPD knob** (if currently in selected mode). (Verify that the **Approach phase** is active on the **MCDU**).

FMA Indications (Green – Active)

SPEED	G/S	LOC	CAT 3 DUAL RADIO 50	AP1+2 1 FD 2 A/THR
--------------	------------	------------	---------------------------	--------------------------

- **SPEED:** Managed speed
- **G/S and LOC:** ILS active

- **CAT3 DUAL:** Both autopilots active for Category III dual-channel Autoland
- **RADIO:** 50 (a “MINIMUM” callout will occur at 50 ft AGL)
- **AP1 + AP2:** Both autopilots, flight directors, and autothrust active

Approach Preparation - Runway 02.

We are below **10,000 ft**, the **target speed is 250 kts**, which will decrease if speed constraints are defined on upcoming waypoints.

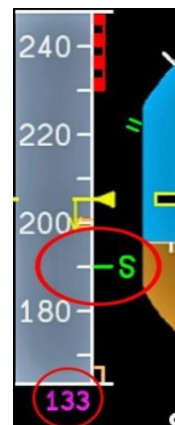
When passing the **deceleration point**, the **Approach Phase** activates automatically (the title on the **MCDU PERF APPR** page changes from white to green), unless it was manually activated earlier.

The **managed target speed** (magenta triangle) suddenly drops to the **VAPP speed**, here **133 kt**.

Note: On the PFD, the triangle may not be visible initially if it is below the current speed scale. The **VAPP speed** is still displayed in magenta at the **bottom** of the speed tape.



1. At speed **O (209 kt)**: Extend **Flaps 1** → speed decreases toward **S speed**.
2. At speed **S (191 kt)**: Extend **Flaps 2** → speed decreases toward **F speed**.
3. Extend the **landing gear**.
4. At speed **F (146 kt)**: Extend **Flaps 3**, then **Flaps FULL**; speed reduces to **VAPP (133 kt)**.



Note: The **Approach Phase** can be **manually activated** before reaching the deceleration point — typically when switching from **STD (QNH)** to **local barometric pressure**.

Landing Preparation

Once the aircraft is established on the ILS:

1. **RWY TURN lights** → ON, **NOSE light** → TAXI.
2. **Ground spoilers:** ARMED.
3. **Autobrake:** Set to **LOW** (or **MED** if the runway is short, wet, or if crosswind conditions exist). The FMA displays **BRK LO** in blue (armed).
4. Ensure that all **ECAM memo items** are **green**; if any are blue, perform the necessary actions.
5. Verify on the **PFD** that the aircraft is tracking both **LOC** and **G/S** correctly.
6. Perform the **Landing** and **Go-Around (GA)** checklists.

Note:

- In an **automatic approach**, the autopilot disconnects **after touchdown**, once the aircraft has slowed sufficiently to vacate the runway.
- In a **manual approach**, the autopilot must be disconnected **no later than at DA/MDA (minimums)**.

In both cases, **autothrust remains active** until the throttles are set to idle.

Short final

1. Verify **three green landing gear lights** (gear down and locked).
2. The **LDG INHIBIT** message in **magenta** appears on the ECAM memo — this means secondary warnings are suppressed for landing.
3. Confirm **approach speed (VAPP = 133 kt)** is maintained.
4. At **50 ft AGL**, the “**MINIMUM**” aural alert sounds.
5. Around **20 ft AGL**, the “**RETARD, RETARD**” callout occurs — bring the throttles to **IDLE** (autothrust disconnects automatically).
6. The aircraft will perform **FLARE** automatically before touchdown (FMA displays FLARE).

Landing

1. Upon **main gear touchdown**, spoilers deploy automatically (if throttles are at IDLE). Check spoiler extension on the **WHEEL page**.
2. **Autobrake** activates when spoilers deploy the **green DECEL** light illuminates
Activation delay: **4 seconds (LOW)**, **2 seconds (MED)**.
3. **Deploy thrust reversers.**
*Reversers are deployed as a **precaution**; if needed, apply reverse thrust by pulling the levers aft to assist braking (e.g., if autobrake does not activate).*
4. **At 70 kt:** Stow the reversers (deactivate).
5. **Disconnect the autopilot.**
7. Once speed is reduced, **apply manual braking to deactivate autobrake.**



Taxi to Gate

Taxi using **idle thrust**.

1. Start the **APU: MASTER SW → ON**, then **START → ON**.
2. **SPEED BRAKE (spoilers): DISARMED.**
3. **Flaps:** Retract to **0**.
4. **Landing lights:** Set **LAND → OFF**.
8. **STROBE lights:** Set **AUTO**.

At the Gate

1. Stop the **chronometer**.
2. **RWY TURN** and **NOSE lights → OFF**.
3. **PARK BRK:** Set **ON**.
4. Shut down the engines: **ENG 1** and **ENG 2 MASTER → OFF**.
5. **BEACON light → OFF**.
6. Connect **EXTERNAL POWER → ON** (via **ISCS GROUND SERVICES** page).
7. Set **SHOCKS → ON** (in ISCS) to position chocks under the wheels.
8. **APU → OFF**.
9. **SEAT BELTS → OFF**.
10. Open the passenger door.

After touchdown, the **FMGS automatically resets** — its flight plan memory is cleared, and the **MCDU** is ready for **the next flight**.

Next Scenario

New approach, and landing on runway 20.

We start with **X-Plane**, and this time we will immediately find ourselves in flight, approximately **250 NM from Ajaccio**, to perform a landing on **runway 20**.

1. Launch a new flight with the **Toliss Airbus A320**.
2. Open the **ISCS**, go to the **SITUATION / A/C CONFIG** page.
3. In the left column under **AVAILABLE SITUATIONS**, select the situation **"250 NM DE LFKJ"** (saved earlier on page 53), then click **LOAD SELECTED SITUATION**.

We now find ourselves in the exact same conditions as before — all parameters are identical — and we can continue our flight.

Note: This remarkable feature is unique to **Toliss aircraft**, making it one of the best platforms for learning Airbus operations.

We are approximately **250 NM from the airport** and about **120 NM from the Top of Descent (T/D)**.

A **red memo message** may appear: **AUTO FLT AP OFF**.

This occurs because **Autopilot 1 (AP1)** has been disengaged (LED off).

Simply **press the AP1 button** to reactivate it the LED will illuminate again, and the message will disappear.

A second **AP OFF** message may briefly reappear before clearing itself. Once both have disappeared, no messages remain in the memo.

Also check that the **A/THR (autothrust)** button is illuminated.

RNAV Approach Planning – Runway 20

We will perform an **RNAV (GPS)** approach to **Runway 20**.

Unlike Runway 02, this runway is **not equipped with an ILS system**, which previously provided automatic precision guidance and allowed an **Autoland**.

In this case, we will be guided **laterally and vertically** by **GPS waypoints**, but on **short final**, we must **disconnect the autopilot** and land manually.

At 180 NM from arrival, the message **ENTER DEST DATA** is displayed in amber in the MCDU to remind us that we must enter the approach data which will allow the FMGS to plan the descent.

Entering Approach Data

At about **180 NM from destination**, the **amber message: ENTER DEST DATA**

appears on the MCDU, reminding us to enter approach data so the **FMGS** can compute the descent path.

1. Press the **PERF** key on the **MCDU** to display the **CRZ** page.
2. Press the **right LSK 6 (NEXT PHASE)** twice first to reach the **DES** page, then the **APPR** page (white title = not yet active).



3. After consulting the **ATIS** for **LFKJ (Ajaccio)**, enter the following data:

- ✓ **QNH:** 1017
- ✓ **TEMP:** 18°C
- ✓ **TRANS FL:** 50
- ✓ **BARO:** 1000
- ✓ **MAG WIND:** leave blank (no wind)
- ✓ **VAPP:** 133 kt (approach speed — small blue characters; can be adjusted manually, larger characters indicate a modified value).

4. Press **left LSK 6 twice** to return to the active **CRZ** page (green title).

Updating the Flight Plan

Ajaccio Tower informs us:

“Runway 20, Approach RNV20, STAR LONS1S, no VIA.”

Note: Our original flight plan (before departure from **LFPO Only**) included an approach to **Runway 02**.

Due to changing weather and shifting winds, we must now **update the approach parameters**. In real-world operations, pilots always reprogram landing parameters to compare **total flight distance** with previously recorded norms.

A significant deviation may indicate an error in flight plan programming.

Steps:

1. Display the **F-PLN** page (press **F-PLN** key).
2. Press **left LSK 6** to open the **LFKJ side review page**.
3. On the **LAT REF FROM LFKJ** page, press **ARRIVAL**.
4. On the **ARRIVAL AT LFKJ** page:
 - Scroll to find and select **RNV20**.
 - Then select **STAR LONS1S**.
 - On the next page, select **NO VIA**.
5. Validate the temporary flight plan (in yellow) by pressing **right LSK 6 (TMPY INSERT)**.
6. On the flight plan page, note a **discontinuity** between **DIVUL** (last waypoint of our route) and **LONSU** (first waypoint of the STAR).
7. Remove the discontinuity with the **CLR** key, then **validate again** with **TMPY INSERT**.

Our flight plan is complete.



The **MCDU** and **ND** display the **DIVUL** waypoint, followed by the **T/D** (shown on the ND as a white arrow), and **LONSU**.

Preparing for Descent

Before descent, set the **FCU altitude** to a lower value than the current altitude.

Typically, this would be the altitude of a waypoint with a restriction, but for simplicity, we will set **3,000 ft**.

As we near the **T/D**, press the **ALT knob** (⊕) on the **FCU** to initiate a **managed descent**.

Alternatively, we can start slightly earlier for a smoother transition — the aircraft will automatically rejoin the vertical path.

In both cases, the **PERF CRZ** page will automatically switch to the **DESCENT** phase.

Important note:

If we **have not entered the landing data (RNAV20, etc.)** before reaching the **last waypoint** of our route (here **DIVUL**), you will be unable to validate the temporary flight plan. The message "SELECT HDG/TRK FIRST" will appear in white on the MCDU.

This means the **FMGS** requests a switch to **selected HDG (Heading)** mode.

Procedure:

1. Clear the message with the **CLR** key.
2. On the **FCU**, **pull the HDG knob** 
 - a) The **HDG LED** extinguishes → you are now in **selected HDG mode** as required by the MCDU.
 - b) On the **FMA**, the third column changes: NAV (managed) is replaced by HDG (active green), and DES (managed) becomes **selected descent mode** (V/S or OP DES).

Managed descent mode cannot function simultaneously with a selected lateral mode; it would be illogical to follow waypoint constraints while not flying over them.

3. Validate the flight plan by pressing **TMPY INSERT**.
The plan turns **green** (active).
You cannot yet re-engage **NAV mode** by pressing the **HDG knob** , as you are either too close to, or past, the first STAR waypoint (**LONSU**).
4. Press **DIR TO**, select the next available waypoint (here **BEBEV**), then press **DIR TO INSERT** (right LSK 6).
 - a) The next waypoint (**BEBEV**) appears in white on the F-PLN page.
 - b) **NAV mode** becomes active again on both the **FMA** and **FCU**.
5. Press the **ALT knob** on the **FCU** to re-engage **DES mode**.

The FMA now displays the active **SPEED**, **DES** and **NAV** modes (in green).



*The speed management in the first column may change from **SPEED** to **THR IDLE** depending on speed.*

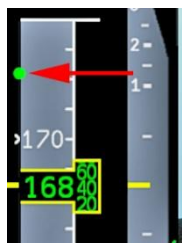
ALT appears in blue until the target altitude is reached.

The **FCU** shows **SPD**, **HDG**, and **ALT** in managed mode (dashes with LEDs on); only altitude is continuously displayed.



Descent Monitoring

We continue the descent



The **MCDU PROG** page and the **PFD** indicate the difference between our actual and theoretical altitudes.

Here, we are **2,350 ft below the descent profile**, but the gap is closing — we will rejoin the descent path shortly.

Just before rejoining, a **green dot** appears next to the altitude scale on the **PFD**, showing the relative position of the computed path.

We pass **HORRO**, still descending.



The **FMA** shows THR IDLE, DES, and NAV active (in green).

The **ND** indicates that we are approaching the deceleration point.

At this point, **manually activate the Approach Phase** on the **MCDU**: Press **ACTIVATE APPR PHASE + CONFIRM**.

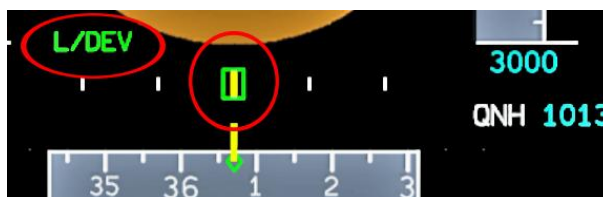
There is **no change on the FMA** immediately.



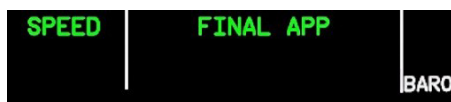
However, on the **PFD**, **vertical deviation indicators** appear alongside the altitude scale, confirming the aircraft is ready to track the **final approach path**.

Final Approach and Landing

Below the altitude scale on the **PFD**, we can now see the **lateral and vertical deviation indicators**, showing our position relative to the managed descent path.



After completing the **right turn**, it is time to **press the APPR button** on the **FCU** to engage the **FINAL APP** mode.



This mode will guide the aircraft along the programmed **RNAV approach trajectory (STAR)**.

Landing Configuration Sequence



- At speed **0** (209 kt) → Set flaps to **1**.
The aircraft will decelerate to **speed S**.
- At speed **S** (191 kt) → Set flaps to **2**.
The aircraft will decelerate to **speed F**.
- **Extend the landing gear.**
- At speed **F** (146 kt) → Set flaps to **3**.

- ✓ Then set **flaps to FULL**. The aircraft will slow to **VAPP (133 kt)**.
- ✓ **RWY TURN OFF lights: ON** and **NOSE light: TAXI**
- ✓ **Ground spoilers: ARMED**
- ✓ **Autobrake: LOW** (set to **MED** if the runway is short, wet, or there is a crosswind)
The **FMA** displays **BRK LO** (blue = armed).
- ✓ Verify that all **ECAM MEMO** messages are **green**.
If any are **blue**, make the necessary corrections.
- ✓ Check on the **PFD** that the aircraft is correctly following both the **vertical** and **lateral** paths.
- ✓ Verify that the **three green landing gear lights** are illuminated.
- ✓ Confirm **Autobrake LOW** and **spoilers armed**.
- ✓ The **LDG INHIBIT** message (magenta) appears on the memo, indicating that **secondary alerts** are inhibited during landing.
 - ✓ **Disconnect the autopilot** when the aircraft is **aligned with the runway**.
Note: You may disconnect earlier and follow the flight directors manually for fine trajectory corrections.
- ✓ Verify that the aircraft maintains **VAPP (133 kt)**.
- ✓ At **200 ft AGL**, the **"MINIMUM"** callout will sound.
- ✓ At **20 ft**, the **"RETARD, RETARD"** callout will sound.
Move the **thrust levers to IDLE** (the **autothrust** will automatically disengage).
- ✓ Perform the **flare** just before touchdown.

Refer to page 60 for taxi and parking procedures.

Diversion - Alternate Airport LFKF Figari.

1. Launch a new flight with the **Toliss Airbus A320**.
2. Open the **ISCS**, go to the **SITUATION / A/C CONFIG** page.
3. In the **AVAILABLE SITUATIONS** list, select **"250 NM DE LFKJ"** (saved earlier on page 53), and press **LOAD SELECTED SITUATION**.

You are now in the same situation as before: all parameters are identical.

We are in cruise, about **250 NM from Ajaccio (LFKJ)** and **120 NM from the Top of Descent**, preparing to land on **Runway 02**.

You are now in the same situation as before: all parameters are identical.

We are in cruise, about **250 NM from Ajaccio (LFKJ)** and **120 NM from the Top of Descent**, preparing to land on **Runway 02**.

AJACCIO Tower advises that we cannot land at AJACCIO. We must revise our flight plan and change the destination airport to LFKF (Figari).

FROM	UTC	125	SPD/ALT
MEDAM	1741	.80/FL350	
V24	BRG171°	19NM	
VEVAR	1745	/ FL350	
V24	TRK167°	36	
GAPDO	1750	/	
UY24		27	
NIZ	1753	/	
M622		10	
PIGOS	1755	/	
DEST	UTC	DIST	EF08
LFKJ02	1823	250	3.9

Situation Overview

- On the **MCDU F-PLN** page, we see the next waypoint: **VEVAR**.
- The **destination** shown is **LFKJ**, approximately **250 NM ahead**.
- The **ND** confirms this, showing the **T/D** located just after **DIVUL**.



Changing the Destination Airport

Changing the destination can be done from the **lateral revision page** of **any** waypoint on our route (*except the next one — here, VEVAR*).

Since **LFKF** lies **further south** than **LFKJ**, our total flight distance will increase.

For this reason, we will choose the **last waypoint** of the route — **DIVUL** — though we could also select **PIGOS**, **NIZ**, or **GAPDO**.



1. Open the **DIVUL** side revision page (**LSK L**).

2. Type **LFKF** into the **scratchpad**, then press **LSK 4R (NEW DEST)**.

3. Validate the **temporary flight plan** with **TMPY INSERT**.



The new flight plan appears in green, confirming activation.

Our **destination LFKF** is now registered, and the **ND** display updates accordingly the last waypoint shown is now **DIVUL**.



Entering the Approach for LFKF

The procedure is identical to the one used for LFKJ (see **page 24**).

1. Display the **F-PLN** page (press **F-PLN** key).
2. Press **left LSK 6** to open the **LFKF** side revision page.
3. On the **LAT REF FROM LFKF** page, press **ARRIVAL**.
4. On the **ARRIVAL AT LFKF** page:
 - Scroll through the available approaches and select **ILS23**.
 - Select the **STAR LONS2M**.
 - On the next page, choose **NO VIA**, then **TRANS NONE**.



5. Validate the temporary flight plan (yellow) by pressing **right LSK 6 (TMPY INSERT)**.

6. On the **MCDU F-PLN** page, you will notice a **discontinuity** between **DIVUL** the last waypoint of our route and **LONSU**, the first waypoint of the STAR.



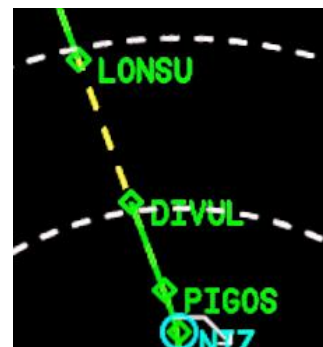
```

      TMPY 125 ↔
NIZ      UTC SPD/ALT
      1753 .80/ FL350
M622     10NM
PIGOS    1755 " / "
M622     TRK147° 22
DIVUL    1757 " / "
LONS2M   36
LONSU    1802 254/ FL343
LONS2M   69
AJO      1812 .80/ FL104
TMPY     TMPY
←ERASE   INSERT*
      ↑↓

```

7. Remove the discontinuity by pressing the **CLR** key on the MCDU.

The **temporary flight plan** appears in **yellow** on the MCDU and as **yellow dashed lines** on the ND.



```

      125 ↔
NIZ      UTC SPD/ALT
      1753 .80/ FL350
M622     10NM
PIGOS    1755 " / "
M622     TRK147° 22
DIVUL    1757 " / "
      34
(T/D)    1802 " / FL350
LONS2M   2
LONSU    1802 " / FL343
DEST     UTC DIST EFOB
LKF23    1827 249 3.8
      ↑↓

```

8. Validate the temporary flight plan using the **TMPY INSERT** key.

The **final flight plan** now appears in **green** on the MCDU and as a **continuous green line** on the ND.



```

      APPR
QNH      1017      FINAL
TEMP     18°      ILS23
O=209    BARO     340
MAG WIND [ ]/[ ]  RADIO [ ]
S=191    [ ]
TRANS FL FL50     F=146
VAPP     VLS     LDG CONF
133      128     FULL/CONF3*
PREV     NEXT
<PHASE   PHASE>

```

Entering Approach Parameters for LFKF

- QNH: 1017
- TEMP: 18°C
- TRANS FL: FL50
- BARO: 340

Note: RADIO minima are used only for CAT III approaches (automatic landings).
BARO minima are used for all other types of approaches (ILS, RNAV, etc.).

Preparing for a Possible Go-Around

A **missed approach** (go-around) procedure must **always** be prepared, even if rarely executed. During our earlier flights, this step was omitted for simplicity, but in real operations, it is **mandatory** for every approach.

Unexpected events (e.g., runway blockage, aircraft on the runway, or unstable approach) may require a go-around at any stage even on short final.

Therefore, the **go-around phase** must be programmed in advance.

```

      GO AROUND
FLP RETR  F=145
SLT RETR  S=190
CLEAN     O=208
THR RED/ACC 2000/2000  ENG OUT ACC 2000
PREV
<PHASE

```

After entering the approach parameters:

- Press **LSK 6R (NEXT PHASE)** to display the **GO AROUND** phase.
- Modify the default **THR RED / ACC** altitudes:
Enter **2000/2000** in the scratchpad and insert it using the corresponding **LSK**. Then enter **2000** again for **ENG OUT ACC** (engine-out acceleration altitude).

These values define the altitude profile for the **initial climb** after the **APromptu Approach (API)**.

The aircraft will climb to **2000 ft** at **maximum GA thrust**, then reduce pitch to accelerate, following **F, S, and 0** speed markers.

Press the **PREV PHASE** twice to return to the **DES** phase.

At approximately **180 NM from destination**, an **amber message** may appear in the MCDU scratchpad: **ENTER DEST DATA**

This serves to:

- Remind you to enter approach data if not yet done, or
- Verify the data already entered.

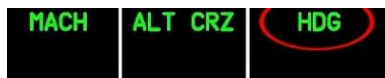
We are currently in **cruise (ALT CRZ)**, with **managed speed** and **lateral navigation**.



The FMA displays **NAV** in green (active managed lateral navigation).

Descent and Heading Changes

1. We turn left to heading **110°**.



Switch to **HDG SEL** mode.

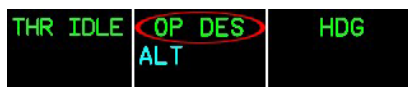
The ND now shows our track as **green dashed lines**.

We have passed **DIVUL**; the next waypoint is **LONSU**, with a **lateral deviation of 3.3 NM left**.



2. Cleared to descend to **FL300**.

- Set **30000** on the **FCU altitude window**.
*If we press the **ALT** knob (to engage managed DES), the aircraft will not descend because **DES mode requires managed NAV** to be active.*
- Therefore, **pull the ALT knob** to initiate descent in **OPEN DES** mode.



The FMA displays **OP DES**, which ignores altitude constraints.

3. Approaching **20 NM** from the diversion point, **turn right to heading 190°** and continue descent to **FL130**.
 - Set **FL130** on the FCU.
 - Press **EXPED** to expedite descent.
 - At **HDG 190**, arm **NAV** mode by pressing the **HDG knob**.

The FMA now displays:



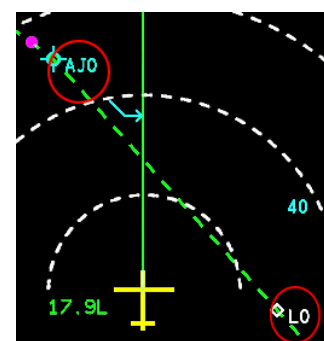
- **EXP DES** (active vertical mode, no altitude constraints)
- **HDG** in green (active lateral mode)
- **NAV** in blue (armed lateral mode)

Note: The **HDG** light is illuminated on the FCU.



FROM	UTC	125	↔
DIVUL	1757	.80/ FL350	
LONS2M	BRG288°	28NM	
LONSU	1810	287/ FL95	
(T/D)	TRK147°	8	
LONS2M	1808	.78/ FL350	
AJO	1815	312/ FL134	
(SPD)		63	
(LIM)	1818	*310/ FL115	
DEST	UTC	DIST	EF08
LFKF23	1830	159	3.7
NO NAV INTERCEPT			

On the MCDU, the scratchpad may **NO NAV INTERCEPT** because the aircraft has already passed **LONSU**, although it is still displayed as the waypoint.



show
next

Route Correction and Intercept

FROM	UTC	125	↔
LONSU	1807	339/ FL218	
LONS2M	BRG169°	39NM	
AJO	1813	312/ FL134	
(SPD)	TRK135°	6	
(LIM)	1814	*310/ FL115	
LONS2M		16	
FGI	1817	250/ FL84	
LONS2M		4	
D096D	1818	- / FL73	
DEST	UTC	DIST	EF08
LFKF23	1828	101	3.7

To correct this:

Delete **DIVUL** using the **CLR** key.

The next waypoint becomes **AJO**, which matches the actual flight path.

The **ND** now displays the updated route and the **INTCPT** (intercept) point with our planned track.

NAV mode becomes



active.



WAYPOINT	UTC	DIST
AJO	1814	36
F-PLN WPTS		
AJO	DIRECT TO	
←FGI	ABEAM PTS→	
←D096D	RADIAL IN	327°→
←MASAL	RADIAL OUT	[]°→
DIR TO	DIR TO	
←ERASE	INSERT*	

Alternatively, we could have used the **DIR TO** function:

- Press **DIR TO** on the MCDU.
- Select **AJO**.
- The yellow dashed line shows the direct path.
- Press **DIR TO INSERT** to confirm.



The message **T/D REACHED** appears in **white** on the **FMA**, indicating that we have passed the calculated Top of Descent without initiating the managed descent.

FROM	UTC	125	↔
LONSU	1033	.80/ FL254	
LONS2M	BRG148°	10NM	
AJO	1040	305/ FL114	
(SPD)	TRK135°	6	

We are now rejoining the planned route, descending rapidly.

The **ND** and **MCDU** indicate that we are **10 NM from the AJO VOR**, with a forecast altitude of **FL114**.

Descent to 4,000 ft

Upon reaching **FL130**, ATC instructs a descent to **4,000 ft**.

- Set **4000** on the **FCU** altitude window.
- Pull the **ALT knob** to descend in **OPEN DES** mode.
No altitude constraints apply; ATC has cleared us to descend directly to 4,000 ft.

Switch to **QNH 1017** as indicated on the **PERF APPR** page even before reaching the transition altitude. The **PFD** now displays **QNH 1017** beneath the altitude scale.

Passing FL 100

- ✓ **Landing lights:** ON
- ✓ **Seat belts:** ON
- ✓ **LS display:** ON (for ILS guidance)
- ✓ **Constraints:** Displayed on **ND**
- ✓ **TCAS:** Set to *Below*
- ✓ **Approach phase:** Manually activate on the **MCDU (PERF page)**
- ✓ **Speed control:** Switch to **selected speed mode** (pull the **SPD knob**) and maintain below **250 kt**
- ✓ Use **speed brakes** as needed.



Radar Vectoring by ATC

ATC instructs: **Turn left heading 130°.**

Set **HDG 130** and pull  the HDG knob.



From this point, we are under **ATC radar vectors**.

ATC will guide us laterally and vertically, so we will no longer follow the managed flight plan. Both **lateral** and **vertical** managed modes are disengaged.

The **flight plan on the ND** is now secondary, but it remains useful to **display the ILS approach path** for **Runway 23**, which we'll use for LOC interception.

On the MCDU

- Delete the waypoints constituting the final approach.
 - To display the ILS trajectory on the ND:
1. Identify the first **ILS waypoint** aligned with **Runway 23**. This is **CI23**.



2. On the MCDU, press the **F-PLN** key.

	UTC	SPD/ALT	
INTCPT	1047	267 / 5000	
(DECEL)	1040	- / 4000	GNM
15FGI	TRK345°	5	
D0550A	1040	*200 / *	4000
C226°			
CI23	1051	161 / *	4000
C226°			
FI23	1053	145 / *	1340
DEST	UTC	DIST	EFOB
LKFK23	1055	48	3.6

3. Open the **DIR TO** page.

WAYPOINT	DIR TO	UTC	DIST
[]	---	---	---
F-PLN WPTS			
+INTCPT	DIRECT TO		
+D0550	ABEAM PTS		
+CI23	RADIAL IN	[]	
+FI23	RADIAL OUT	[]	
P			

4. Select **CI23** (left LSK corresponding to that waypoint).

WAYPOINT	DIR TO	UTC	DIST
CI23		1147	10
F-PLN WPTS			
+D096D	DIRECT TO		
+MASAL	ABEAM PTS		
+INTCPT	RADIAL IN	047°	
+D0550	RADIAL OUT	[]	
DIR TO	DIR TO		
+ERASE	INSERT		

5. Under **RADIAL IN**, replace the default blue value with the **reciprocal of the of runway heading**.
On the map, the runway heading for LKFK RWY 23 is **227°**
 $227 - 180 = 047$.

6. Press **DIR TO INSERT** (LSK 6R).

7. The **FMA** indicates **HDG (green)** active, and **NAV (blue)** armed.

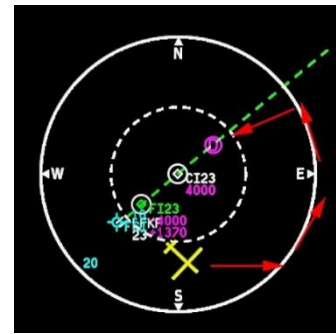
The **LAT** LED on the **FCU** is illuminated.

8. Pull the  HDG rotary knob.



The ND in **PLAN** mode now displays the **runway 23 axis at LFKF as green dashed lines**.

Red arrows indicate the **approximate circuit** to be flown to intercept the runway centerline and the ILS.

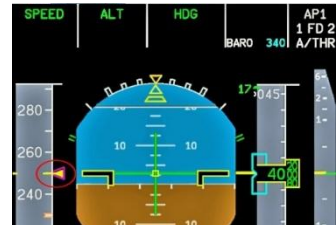


We are at **4,000 feet**.

The **FMA** shows **managed speed**.

We are flying at **250 knots** (indicated by the yellow triangle).

The **magenta triangle** shows the **target managed speed (250 Kts)**.



The **FMGS** maintains the **250-knot speed constraint** below **FL100**.

ATC instructs us to reduce speed to 220 knots.

Set **220** on the FCU and **pull** the **SPD knob**.

→ The **yellow triangle** (actual speed) moves toward the **blue triangle** (selected target speed 220 Kts).

→ The **yellow arrow** indicates the trend of deceleration.



The **small green circle** on the speed scale is the **Green Dot**, representing the **optimum clean configuration speed and maneuvering speed**.

We reduce to **Green Dot speed** for fuel economy.

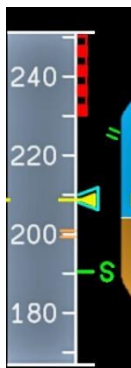
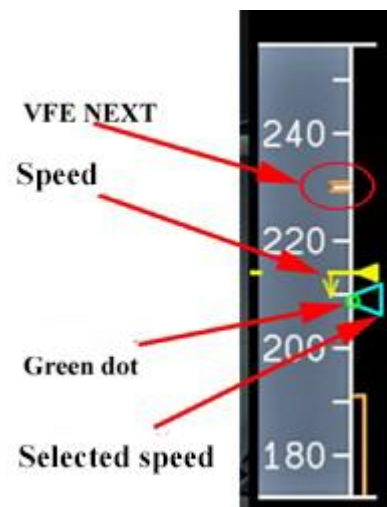
Adjust the selected speed on the FCU so that the **blue triangle** aligns with the **green dot**.

The aircraft slows down to the selected speed.

VFE NEXT (maximum flap extension speed) corresponds to the next flap detent.

Since our actual speed is now **below VFE NEXT**, extend the flaps **one notch**.

Note: Extending flaps when the current speed is **above VFE NEXT** can damage the flaps.



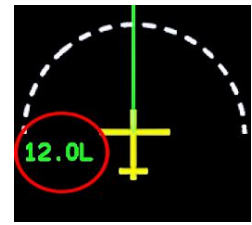
We pulled out a flap notch:
The PFD is presented as follows.

The memo shows 1 flap notch extended.



For this tutorial, we continue under **radar guidance from ATC**, which positions us for a visual reference of **Runway 23** on the ND, enabling us to capture the **ILS**.

- ✓ At a **lateral offset of 12.0L** from the runway centerline (shown on ND 12.0L).

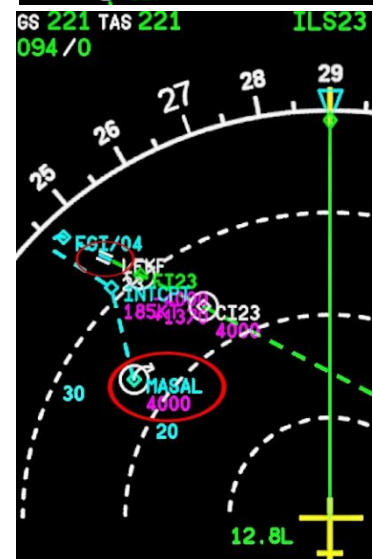


Turn **left heading 060°**.

- The ND shows the **runway axis** and the **CI23 waypoint** in white, targeted on the DIR TO page.



- ✓ Then turn **left heading 290°** to intercept the runway centerline and the ILS.
- ✓ Press the **LS** key to display the **LOC** and **G/S** indicators (magenta diamonds) on the **PFD**.



- ✓ On the **FCU**, press **APPR** to arm **LOC** and **GLIDE** modes.

The **FMA** displays:

- **ALT (green)** active, **G/S (blue)** armed
- **HDG (green)** active, **LOC (blue)** armed

SPEED	ALT G/S	HDG LOC
--------------	-------------------	-------------------

Note: Since we are under radar guidance and know our exact position, it is unnecessary to arm **LOC** first and then **G/S** separately.

We can directly arm the full **ILS approach** (LOC + G/S) safely.

On the ND, the **blue dotted line** shows the **go-around trajectory** toward **MAZAL** at **4,000 ft**.

- As the aircraft approaches the ILS axis, it begins to **turn**.
- It **stabilizes** on the **LOC**.
- aircraft approaches the **G/S** axis
- Then the **G/S** is captured
- and the **aircraft begins its descent**.

ALT G/S	LOC*
ALT G/S	LOC
G/S*	LOC
G/S*	LOC
G/S	LOC

1. Press the **SPD knob**  to switch to **managed speed mode**.
(Verify that the **Approach Phase** is **active** in the **MCDU**).
The speed automatically reduces to **F speed** on the PFD if approach phase active.
2. **Autobrake**: set to **LOW** (*MED if runway is short, wet, or crosswind present*).
→ FMA column 1: **BRK LO** (blue – armed).
3. **Ground spoilers**: **ARM**.
4. **RWY TURN** lights: **ON**.
NOSE light: **TAXI**.
5. **Flaps 2 (F speed)**.
6. **Landing gear down**.
7. **Flaps 3**, then **FULL**.
8. Check that all **ECAM MEMO** messages are **green**.

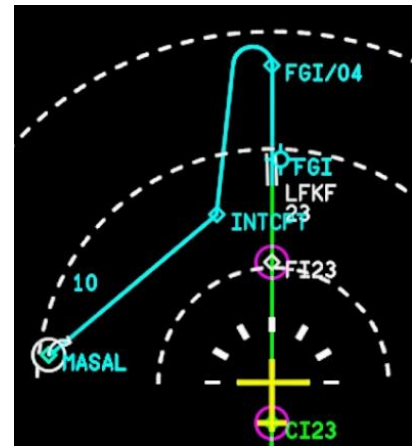
You can now **save a situation** called "**LFKF SHORT FINAL**" to practice landings or go-arounds without restarting the full flight.

ILS Offset and Visual Adjustment

Note that the **ILS axis** is slightly **offset** from the **runway centerline** due to terrain on the right of the approach path. You'll observe the **runway to the right** of the ILS axis.

At **1,000 ft AGL (maximum)**:

- **Disconnect the autopilot**.
- **Maintain autothrust** until landing.
- Manually **align** with the runway centerline.



You may either **land immediately**, or continue to the **next page** for the **go-around procedure**.

9. Verify the **three green landing gear lights**.
10. The **LDG INHIBIT** message in magenta on the ECAM MEMO indicates that secondary alerts are **inhibited for landing**.
11. Confirm that the aircraft is at **VAPP = 133 Kts**.
12. At **340 ft AGL**, the **MINIMUM** alert sounds.
13. At **20 ft**, the "**RETARD, RETARD**" callout sounds.
→ Retard the throttles to **IDLE** (autothrust disengages automatically).
14. **Flare** just before touchdown.
15. Upon **main gear touchdown**, **spoilers deploy automatically** (if throttles are at idle).
→ Verify spoiler extension on the **WHEEL** page.

Rollout and Deceleration

16. **Autobrake** engages automatically when spoilers deploy.
The **DECEL** light illuminates **green** (after ~4 sec in LOW, 2 sec in MED).



17. **Engage thrust reversers.**

*Note: Reversers are always deployed as a **precaution** levers at idle and thrust applied as needed (for example, if the autobrake does not engage).*

18. **At 70 Kts:** Disengage thrust reversers.
19. As the aircraft slows, **apply manual braking** to disengage the **autobrake**.

See page 60 for **taxi-in and parking procedures**.

Go-Around Procedure

Case 1 – Above the Target Altitude (e.g., > 4,000 ft at MAZAL)

In this case, there is **no actual go-around**.

Instead, update the FCU **altitude selector** to **4,000 ft** after **glide capture**, and modify the flight plan as needed (using **DIR TO MAZAL**) or follow **ATC radar vectors**.

The **MCDU GO AROUND** phase is **not activated**.

Case 2 – Below the Target Altitude 4,000 ft (e.g., 3,900 ft)

In this case, execute a **go-around** by:

- ✓ Moving the **thrust levers forward to TO/GA**. This signals the **FMGS** to command an immediate climb.
- ✓ Quickly return the levers to **CLB**, as **LVR CLB** will flash almost immediately.

Practical Exercise: Go-Around with Reduced Visibility.

Conditions :

- **Autopilot AP1** active
- **Managed modes:** Speed, Heading, and Altitude
- Descent to **BARO minimums (340 ft)**

Go-Around Steps

1. **Thrust levers:** Push **two detents forward to TO/GA**.
→ Vertical mode switches to **SRS (Speed Reference System)**.
→ Lateral mode: **NAV (managed)**.



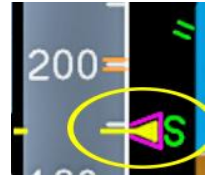
2. **Retract one notch of flaps (Flaps 3).**

3. When **positive rate of climb**, retract landing gear.
Speed will increase; depending on aircraft weight, it may **briefly exceed F speed** before stabilizing below it.



4. At **thrust reduction altitude**, **LVR CLB** flashes on the FMA.

5. Move the thrust levers back two detents to the **CLB** position.
6. The aircraft begins to **accelerate**.
7. At **F speed or above**, retract flaps from **position 3 → position 1**.
→ "1+F" appears on the **ECAM**.
8. The aircraft accelerates to **S speed**.
Speed stabilizes due to a speed constraint (185 Kts) shown as a **red triangle** on the PFD.



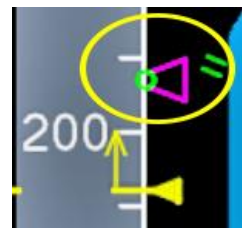
This constraint also appears on the **MCDU (VERT REV AT INTCPT)** page and the **ND**.

FROM	125	↔
FGI/04Δ	UTC 1846	SPD/ALT 189/ 4000
C052°	BRG074°	9NM
INTCPT	1849 *250/	3950
C096°	TRK356°	0

VERT REV AT	INTCPT
CLB SPD LIM	250/FL100
SPD CSTR	185
ALT CSTR	[]



Once the constraint passes, it disappears and the aircraft **continues accelerating**.



9. Retract flaps to position 0.

The aircraft will accelerate and then the speed will stabilize at the green dot speed.

Note: If at speed S the flaps are retracted to position 0, the aircraft will accelerate towards the green dot speed, but the speed constraint of 185 Kts will not be respected.

Important note: During a go-around, even in NAV mode, altitude constraints are not respected. Particular care must therefore be taken during the climb.

10. The ND displays our route and current position:

We are in a left turn (see map) and will rejoin MASAL and the associated holding pattern.

The ND simultaneously displays the route of the STAR LONS2M, which we had entered in the MCDU (red arrows), as well as our current route (yellow arrows) to MASAL.



On the MCDU, the Flight Plan page shows the last waypoint of our GO AROUND track MASAL with an associated holding pattern.

After this, a **F-PLN DISCONTINUITY** appears, followed by **LONSU**, the first point of the STAR LONS2M.

If we remove this discontinuity, the aircraft will return to LONSU to follow the approach route again, resulting in an unnecessarily large detour which must be avoided.

	125	↔
	UTC	SPD/ALT
MASAL	1850	210/* 4000
HOLD R		
SPD	209	
MASAL	----	---/----
---F-PLN DISCONTINUITY---		
LONSU	1905	.80/ FL335
DEST	UTC	DIST EFOB
LFKF23	1930	251 1.3

To continue, two possibilities:

- **Radar guidance:** Use *selected HDG mode* and rejoin the runway axis as before, under ATC radar guidance (DIR TO with Radial IN 034 see page 71).
- **Join the STAR LONS2M track** and follow it until landing which we will now do.

We are now dealing with **two distinct and independent track** separated by a discontinuity:

1. Our Go-Around track:

- The next waypoint is **INTCPT** (the intersection with the STAR).
- The last waypoint is **MASAL**, located at the exit of the holding pattern.
- Beyond this point, the flight plan ends unless the discontinuity is cleared — which should *not* be done.

FROM	125	↔
	UTC	SPD/ALT
FGI/04A	1846	185/ 4000
C052°	BRG052°	BNM
INTCPT	1849	*250/ 4000
C096°	TRK356°	0
MASAL	1851	210/
HOLD R		
SPD	209	
MASAL	----	---/----
DEST	UTC	DIST EFOB
LFKF23	1930	244 1.3

2. The STAR LONS2M:

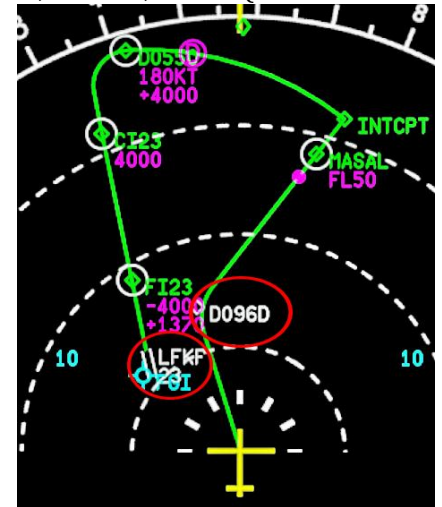
It begins at **LONSU**, and continues via **AJO**, **FGI**, **D096D**, **MASAL**, **INTCPT**, **D0550**, **CI123** (the first ILS approach point aligned with runway 23 at LFKF), and so on.

We will rejoin the STAR route at waypoint D096D, just before MASAL.

Press the **DIR** key, and on the DIR TO page, scroll up through the waypoints. Select **D096D** and confirm by pressing **LSK DIR TO INSERT**.

We are now following the STAR.

The holding pattern disappears, as it is not part of the STAR.
If ATC requests, you can create a new one at MASAL (see page 58).



Note: A FL50 constraint exists before MASAL. ATC had previously cleared us to descend to 5,000 feet this constraint is not respected, since the holding pattern altitude is 4,000 feet (see map).

We continue our flight toward landing.

Activate the **APPR** phase in the MCDU, then proceed as before.

Because the ILS is offset, it is advisable to disconnect the autopilot between **1,000 and 500 feet**, while maintaining autothrust, to manually align with the runway axis.
At **20 feet**, return the throttles to **IDLE**, and **flare** before touchdown.

Then taxi to the gate as previously described (see page 60).

Go-around without speed constraint.

In most cases, a go-around is not accompanied by a speed constraint.

The sequence of actions to be performed is as follows:

1. Push the throttle levers to the **TO/GA** position.
2. Retract one notch of flaps (**position 3**).
3. When a **positive rate of climb** is established: retract the landing gear.
4. At the **thrust reduction / acceleration altitude**, return the throttle levers to the **CL** position — the aircraft begins to accelerate.
5. At **speed F (or above)**: retract the flaps from position 3 to 1.
6. At **speed S (or above)**: retract the flaps to **position 0**.
The aircraft will then continue to accelerate to the **green dot speed**.

ANNEXES

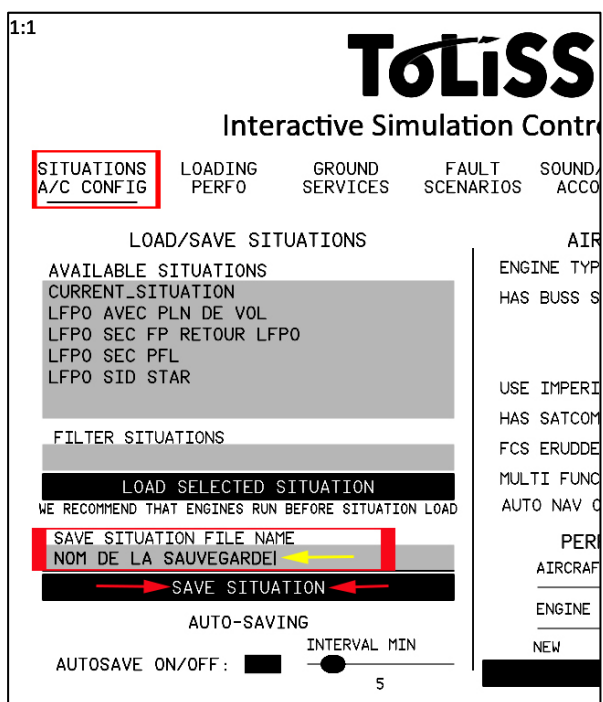
Saving a situation

It is very useful to save situations at different stages during flight preparation and in flight. This allows you to resume a session after closing X-Plane and later find yourself in exactly the same location, with the same aircraft configuration and all the parameters and preparations as they were at the time of saving.

To do this, open the **ISCS**.

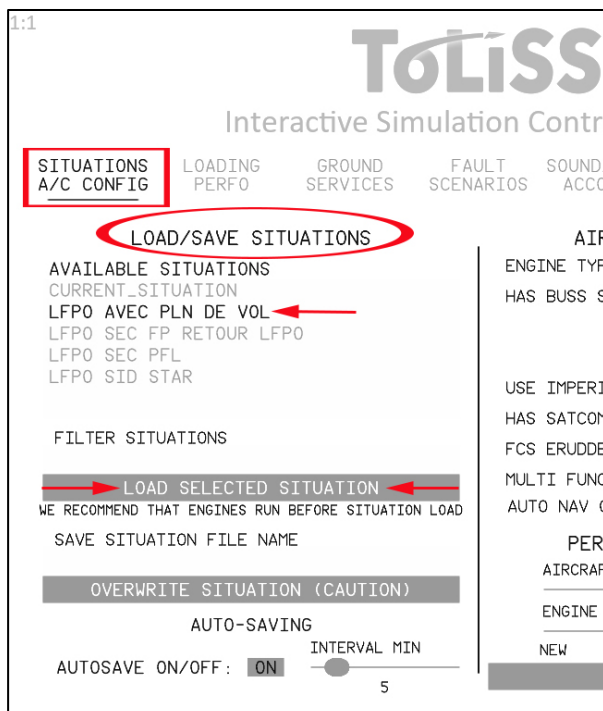
In the X-Plane menu:

Plugins > ToLiss > Open ISCS screen



In the « SITUATIONS A/C CONFIG » tab:

1. In the gray line below « **SAVE SITUATION FILE NAME** » enter the name you want to give to your backup.
*Caution: Do **not** use special characters such as / or - , as the backup will not be performed.*
2. Click on the "**SAVE SITUATION**" line. Your saved situation will immediately appear in the "**AVAILABLE SITUATIONS**" window.
3. Close the ISCS window.



To load a previously saved situation:

1. Open the **ISCS** and go to the « **SITUATIONS A/C CONFIG** » tab. In the box under "**AVAILABLE SITUATIONS**", all recorded situations are listed in blue.
2. Click on the desired situation, it will appear highlighted in white.
3. Click « **LOAD SELECTED SITUATION** ».

***Note:** You can filter saved situations by keywords.*

Automatic Saving (Auto-Save)

In flight only, it is possible to enable automatic saving (**AUTO-SAVING ON**) at regular intervals. This can be configured using the selector located to the right of the **AUTOSAVE ON/OFF** switch at the bottom of the page.

Each new auto-save overwrites the previous one.

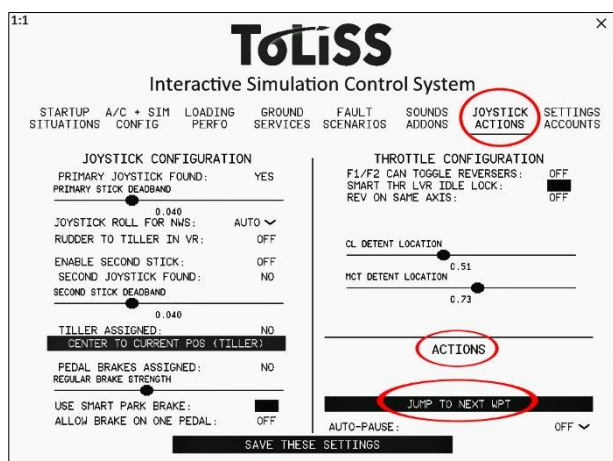
Jump waypoints

The ToLiss A320Neo offers features to shorten cruise phases, avoiding the need to spend long periods in front of the screen.

You can use the **"Jump to Next Waypoint"** or **"200 NM Jump"** functions to move closer to the Top of Descent and continue with the more interesting flight phases.

This function is available under the following conditions:

- **FMA: ALT CRZ** (vertical mode, green) and **NAV** (lateral mode, green) active.
- **Bank angle:** approximately zero.
- **Flight path:** near-zero cross-track error (no lateral deviation displayed on the ND).
- **Distance to next waypoint:** at least 1 NM.

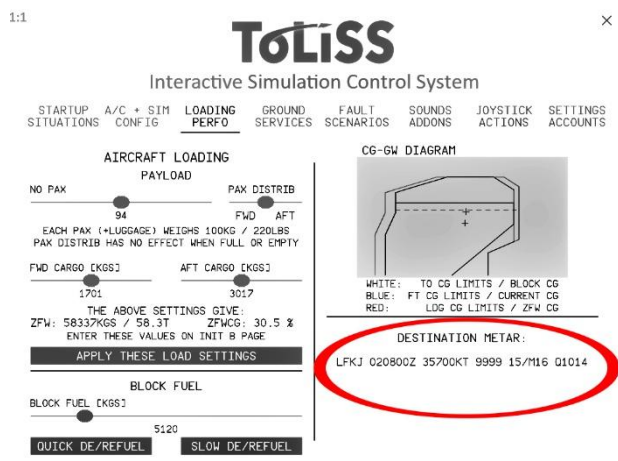


Open the **ISCI JOYSTICK ACTIONS** page.

In the right column, at the bottom of the page, the available option will be displayed.

If the distance to the next waypoint is less than **200 NM**, the available function is **"JUMP TO NEXT WPT"**, as shown here.

METAR at destination only



Check-lists

Once you are familiar with the Airbus A320 flight systems, you can use the checklists provided for each phase of flight.

At the end of the departure briefing

COCKPIT PREPARATION

GEAR PINS & COVERS REMOVED
FUEL QUANTITY KG/LB
SEAT BELTS ON
ADIRS NAV
BARO REF (BOTH)

//END

Before engine start (after turning the BEACONS ON)

BEFORE START

PARKING BRAKE
T.O SPEEDS & THRUST (BOTH)
WINDOWS CLOSED (BOTH)
BEACON ON

//END

When the pushback operator shows the Nose Wheel Steering pin

AFTER START

ANTI ICE
ECAM STATUS CHECKED
PITCH TRIM %
RUDDER TRIM NEUTRAL

//END

Before Cabin ready

TAXI

FLIGHT CONTROLS CHECKED (BOTH)
FLAPS SETTING CONF_ (BOTH)
RADAR & PRED W/S ON & AUTO
ENG MODE SEL
ECAM MEMO T.O NO BLUE
- *AUTO BRK MAX*
- *SEAT BELTS ON*
- *CABIN READY* 
- *SPLRS ARM*
- *FLAPS T.O*
- *T.O CONFIG NORMAL*
CABIN READY
//END

Just before lining up on the runway

LINE-UP

T.O RWY (BOTH)
TCAS
PACKS 1 & 2
//END

Passing through transition altitude (QNH)

APPROACH

BARO REF(BOTH)
SEAT BELTS ON
MINIMUM
AUTO BRAKE
ENG MODE SEL
//END

Before reaching 1,000 ft above ground level

LANDING

ECAM MEMO LDG NO BLUE

- LDG GEAR DN
- SEAT BELTS ON
- CABIN READY 
- SPLRS ARM
- FLAPS FULL or CONF 3

CABIN READY

//END

After takeoff actions are complete and the track is cleared

AFTER LANDING

RADAR & PRED W/S OFF

//END

When seatbelt signs are turned off

PARKING

PARKING BRAKE OR CHOCKS SET

ENGINES OFF

FUEL PUMPS OFF

YELLOW ELEC PUMP OFF

//END

Before leaving the aircraft

SECURING THE AIRCRAFT

OXYGEN OFF

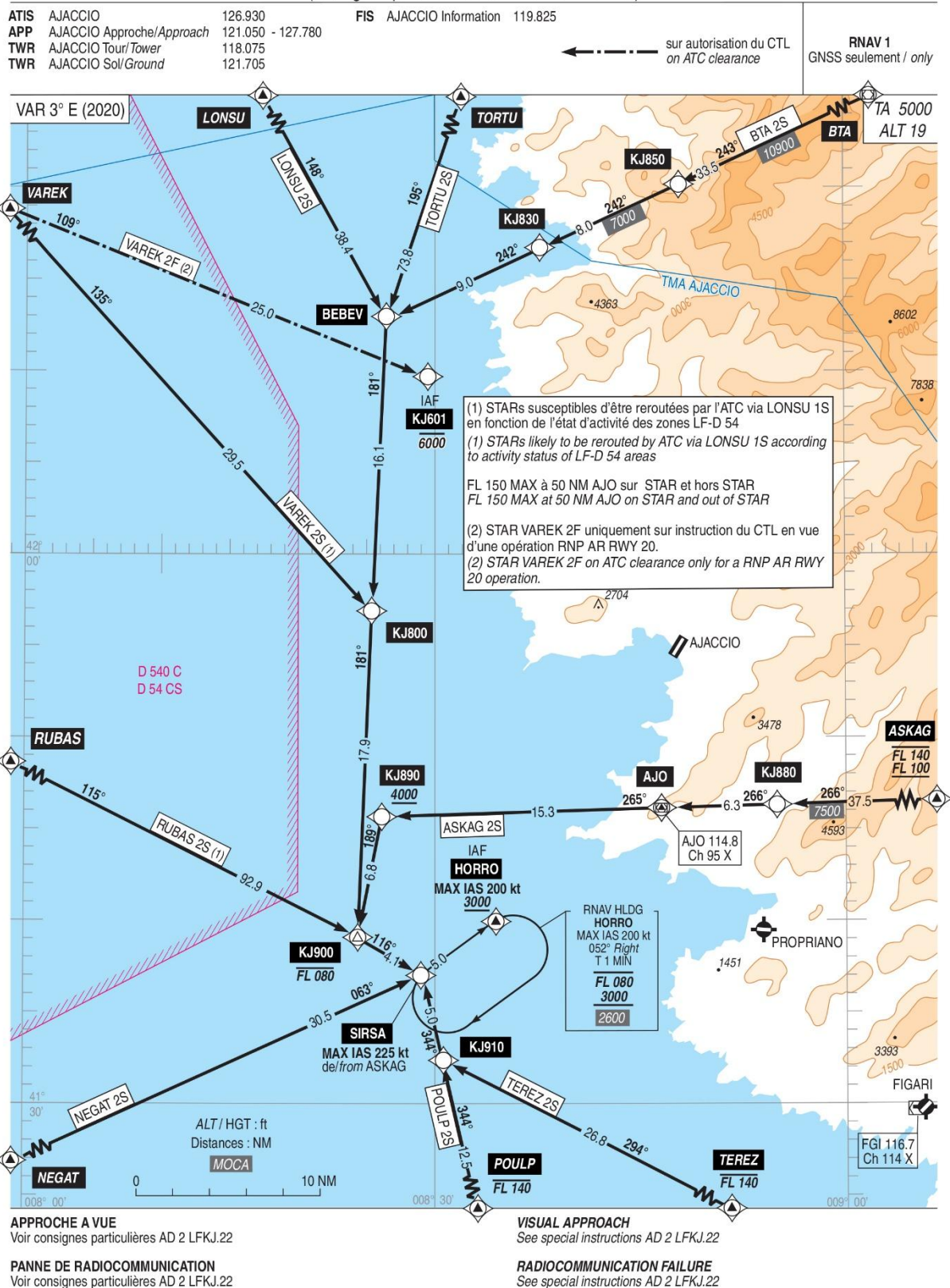
EMER EXIT LT OFF

BATTERIES OFF

//END

FREQ : voir / see AD 2 LFPO COM 01			RNAV 1 GNSS - DME/DME* (*IRU requis /required)		
VAR 1°E (2020)		CREIL			TA 5000



**AJACCIO NAPOLEON BONAPARTE
STAR RNAV CONFIGURATION HORRO**
(Protégées pour/Protected for CAT A, B, C, D)

FIGARI SUD CORSE

CAT A B C

ALT AD: 85, THR: 85 (4 hPa)

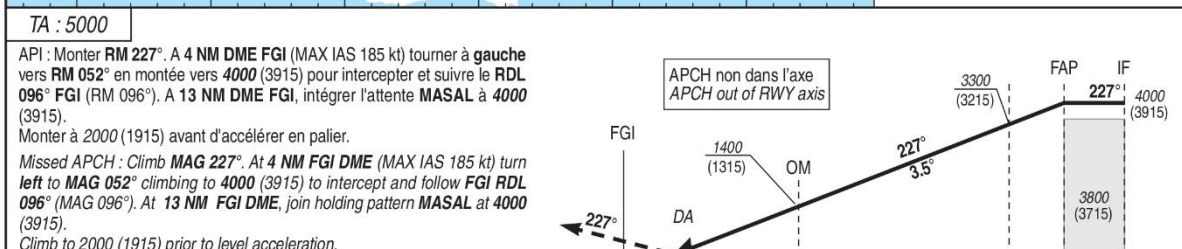
ILS RWY 23

ATIS : FIGARI 118.730

APP : AJACCIO Approche / Approach 121.050

TWR : FIGARI Tour / Tower 120.300 (voir / see ADC 01)

ILS - DME	VAR
GR 110.5	3°E
RDH : 49	(2020)



THR ← (NM)	3.4	8.4	10.2	13.9
DME GR ← (NM)	3.5	8.5	10.3	14.0
DME FGI ← (NM)	4.5	9.5	11.3	15.0

MNM AD : distances verticales en pieds, RVR et VIS en mètres / vertical distances in feet, RVR and VIS in metres.

REF HGT : ALT THR

CAT	ILS (2)			MVL / <i>Circling</i> (3) HJ seulement / <i>daytime only</i>	
	DA (H)	RVR	OCH	MDA (H)	VIS
A	340 (250)	1300	250	1360 (1280)	1500
B				1470 (1380)	1600
C				1770 (1680)	2400

(2) Procédure inutilisable de nuit si indisponibilité des feux : U Monte, Piscia, Caldarello selon conditions (voir AD 2 LFKF.23).
Procedure cannot be used at night if following lights are not operating : U Monte, Piscia, Caldarello according to conditions (see AD 2 LFKF.23).

(3) MVL interdite au Nord-Ouest de la piste. Circuit AD RWY 05 : Droite | Circling prohibited North-West of RWY. Right hand circuit RWY 05.

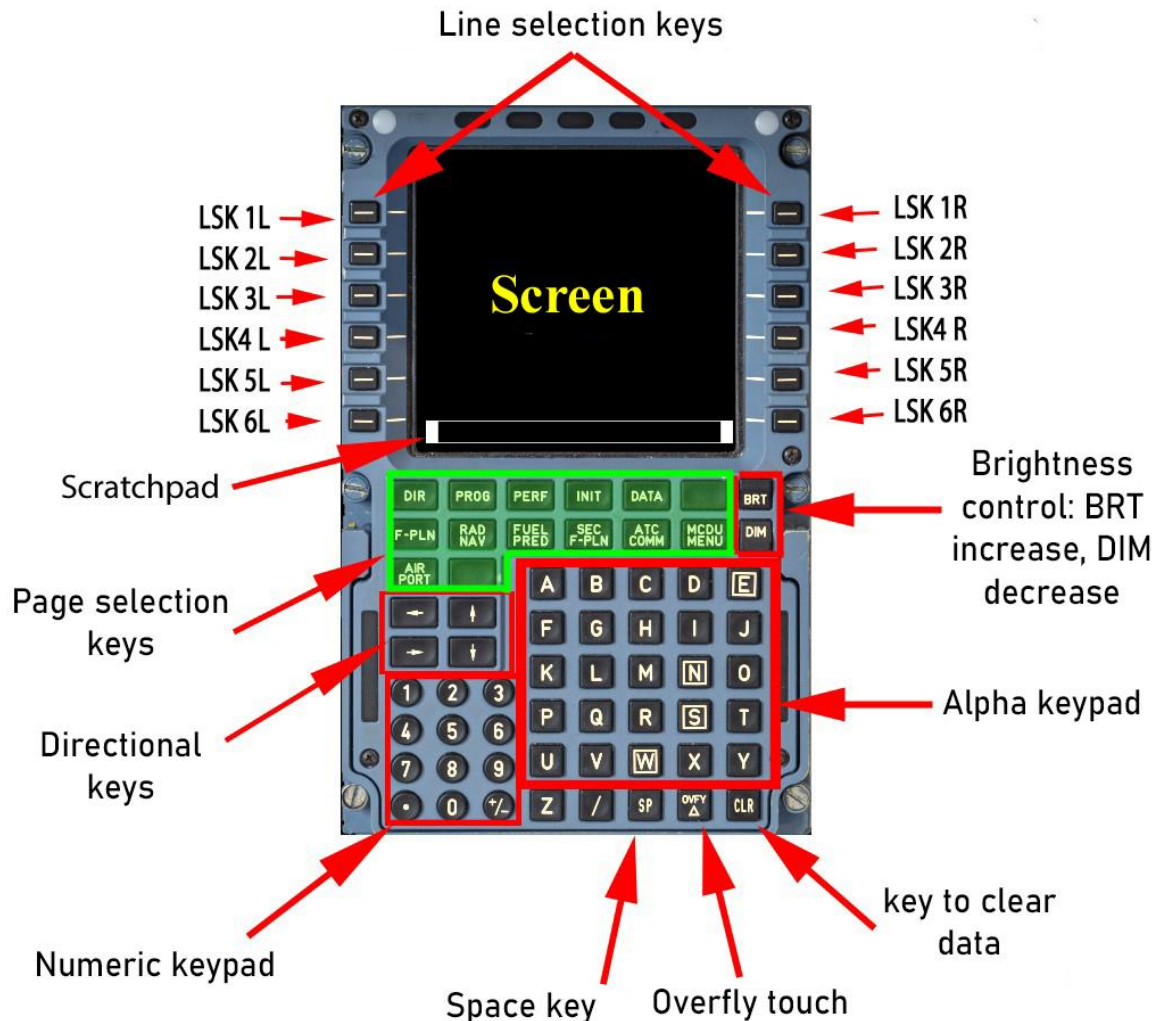
OM - THR	3.4 NM	70 kt 2 min 56	85 kt 2 min 25	100 kt 2 min 03	115 kt 1 min 47	130 kt 1 min 35	145 kt 1 min 25	160 kt 1 min 17
VSP (ft/min)		430	530	620	710	800	900	990

THE FMGS and the MCDU

The **Flight Management and Guidance System (FMGS)** consists of the **FMGC** (Flight Management and Guidance Computer) and the **MCDU** (Multipurpose Control and Display Unit), which serves as the pilot's interface for entering flight data and displaying the information computed by the system.

All flight plan details — from departure to arrival — are entered into the FMGC. The FMGC then calculates the vertical and speed profiles and interacts with the **Flight Director**, **Autopilot**, and **Autothrust** to guide the aircraft accordingly.

The **MCDU** is structured as follows:



- Data is entered using the **alphanumeric keypad** into a buffer area called the **scratchpad**, located at the bottom of the screen.
- Once the data is typed in, it is validated and transferred using the **Line Select Keys (LSKs)** on either side of the display.
- The screen presents both the data to be entered and the information computed by the FMGC.

Each type of information displayed on the MCDU uses specific colors and font styles to convey its status and function:

Page title, comments, scratchpad	White, regular characters
Editable or selectable data	Blue (1)
Mandatory data area	Amber frame
Optional data area	Blue bracket
Non-editable data	Green
Calculated data	Small characters
Constraints	Magenta
Data impacting the flight plan	Followed by a star "*"
Primary flight plan	Green
Next leg of the flight plan	White
Temporary flight plan	Yellow
Secondary flight plan	White

Note: (1) Editable data in blue appears in *small print* when calculated by the system and in *larger print* when being manually edited.

Many MCDU used for flight plan entry contain **secondary pages**. These pages are indicated by the **page sequence symbol** in the top-right corner (↔) indicating that additional pages are accessible using the directional keys. (↔).

Some pages — such as the **F-PLN page** — may contain more data than can fit on one screen. In this case, a **scroll symbol** (↑↓) appears at the bottom of the page, indicating that you can scroll up or down to view additional data.

Conditional Page Access

Certain MCDU pages are only available under specific conditions:

- **INIT A page:** Contains mandatory data outlined in amber. Once this data is validated, the page becomes inaccessible.
- **INIT B page:** Used to enter the **Block Fuel** (total fuel onboard). It is only accessible when the engines are **off**.
Once the engines are started, this page is replaced by the **FUEL PRED page**.

These pages will be explained in greater detail throughout the tutorial, following the logical order of flight preparation and in-flight operations.

Please note that certain MCDU pages are automatically updated throughout the flight.

The **PERF (performance)** page dynamically displays the various flight phases: **TAKE OFF, CLIMB, CRUISE, DESCENT, APPROACH** and **GO AROUND**.

- **At the gate (before departure)**, the active phase shown is **TAKEOFF**, but it is not yet active.
It becomes active when the thrust levers are positioned to **FLEX** (if a FLEX temperature has been entered in the MCDU) or to **TOGA**.
- The **TAKEOFF** phase remains active until reaching the **acceleration altitude**, after which it automatically transitions to the **CLIMB** phase.
- The **CLIMB** phase continues until the **cruise altitude** (entered on the INIT page or later updated on the PROG page) is reached and maintained.
- The **CRUISE** phase automatically appears once the aircraft stabilizes at the cruise altitude. It remains active until:
 - a. The aircraft begins descent, or
 - b. It comes within **200 NM** of the destination airport and descends below **FL200**. At that point, the **DESCENT** phase is activated.

Descent and Approach Phases

The **DESCENT** phase remains active until one of the following occurs:

1. **Manual activation** of the **APPROACH** phase via the MCDU (commonly done when switching from STD to QNH).
2. **Automatic activation** of the **APPROACH** phase:
 - When passing the **DECEL** point.
 - When **LOC/LOC*** (previously armed) engages below **9500 feet AGL**.

The **APPROACH** phase remains active until one of these events occurs:

3. **Landing** — approximately **30 seconds after touchdown**, the page automatically resets to the **TAKEOFF** phase for the next flight (with no pre-filled parameters).
4. **Advancing the thrust levers to TOGA**, which activates the **GO AROUND** phase.
5. **Climbing to a new cruise level** — when a new **CRZ FL** altitude is entered on the FCU.

Note:

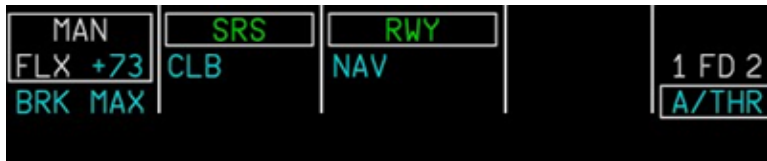
The **APPROACH** phase can be manually activated at any time without first going through the **CRUISE** or **DESCENT** phases.

This is particularly useful when returning quickly to the departure airport: you simply enter the landing runway parameters and activate the **APPROACH** phase.

Similarly, after a **go-around**, a new approach can be prepared by manually reactivating the **APPROACH** phase.

In general, pilots **do not wait** for automatic activation — they **manually trigger** the **APPROACH** phase when switching from **STD** to **QNH** on the barometric selector.

THE FMA (Flight Mode Annunciator)



Located just **above the PFD (Primary Flight Display)**, the **FMA** is one of the most critical instruments—together with the FCU—for understanding in which mode the aircraft is currently operating.

It consists of **five columns**, displayed from left to right:

1. **Speed management mode**
2. **Vertical guidance mode**
3. **Lateral guidance mode**
4. **Approach mode**
5. **Automatic systems mode**

Color Coding

Each indication on the FMA uses a specific color to represent its status:

- **Green** – *Active* mode
- **Blue** – *Armed* (standby) mode
- **White** – *Engaged* or *transitioning* mode (change from blue to green)

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