AIRBUS X Extended

Volume **6**
Step By Step Guide
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RECORD OF REVISIONS

Revision n^o	Issue date	Description
01-01	09/12/2012	Initial Volume
01-02	10/12/2012	Changed paragraphs: 5.3 #42, 5.4 #56, 5.21 #281 and 6.6

Table of Content

1. Start – FSX-Settings

1.1 Start FSX

Start the FSX with a "FREE FLIGHT" and use the following options:

Aircraft:	**Aerosoft Airbus X Ext A320-214 CFM Sharklets** (any airline)
Weather:	Fair weather
Location:	Frankfurt (EDDF) any gate
Time and Season:	Day – any season

*Note for **AES** users and if MEGA AIRPORT FRANKFURT is installed: We suggest using one of the "small" gates in Frankfurt at terminal A (like A40 or 42) because at some other gates there might be problems with the aircrafts position and AES will not start correctly.*

Do **NOT** use default ATC and disable AI traffic. The reasons being are that ATC/AI can use different runways than we use in our tutorial. This might end up
- EDDF – Departure Airport: AI may use for approaches 25R, causing immediate TA's and RA's on takeoff.
- LOWW – Arrival Airport: Apparently default ATC and AI use the opposing runway 34.

If you load the aircraft it is not "dark & cold". Please set all knobs, switches and buttons to OFF so that no lights are ON (Batteries 1 + 2 should be set OFF last) - please see chapter 5.25: Overhead Panel –. But the **easiest** way to make those settings (and necessary for this tutorial flight) is to use the ACFT STATE functionality of the right MCDU and set the aircraft state to "COLD DARK" (please see chapter 4.3 for details).

1.2 General FSX Settings

Adjust the FSX settings according to the Volume 1 of the Airbus X Ext documentation (chapter FSX Settings) which you will find in the FSX-folder under Aerosoft /Airbus X Extended / Documentation /.

1.3 Unit of measure:

The MCDU weight and temperature settings are in kg and degree Celsius. To compare values the FSX should be set accordingly. Please open the respective FSX menu Options / Settings / General and change **International – unit of measure to Hybrid (feet, millibars)** as in the picture below.
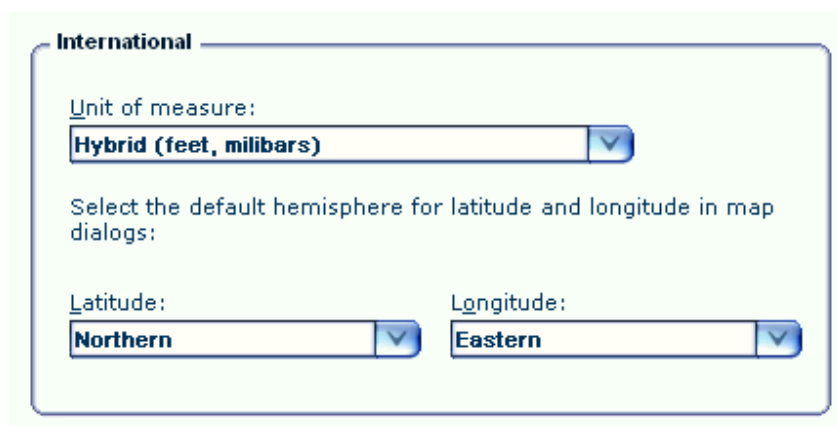
Picture 1: FSX – Unit of measure

1.4   Joystick Settings:

To fly the Aerosoft Airbus X Ext in an optimal way a joystick (like in the real aircraft the sidestick) should be used. The Aerosoft Airbus X Ext customized FSX settings (Options / Settings / Controls / Calibration) for the joystick in FSX should look as follows:
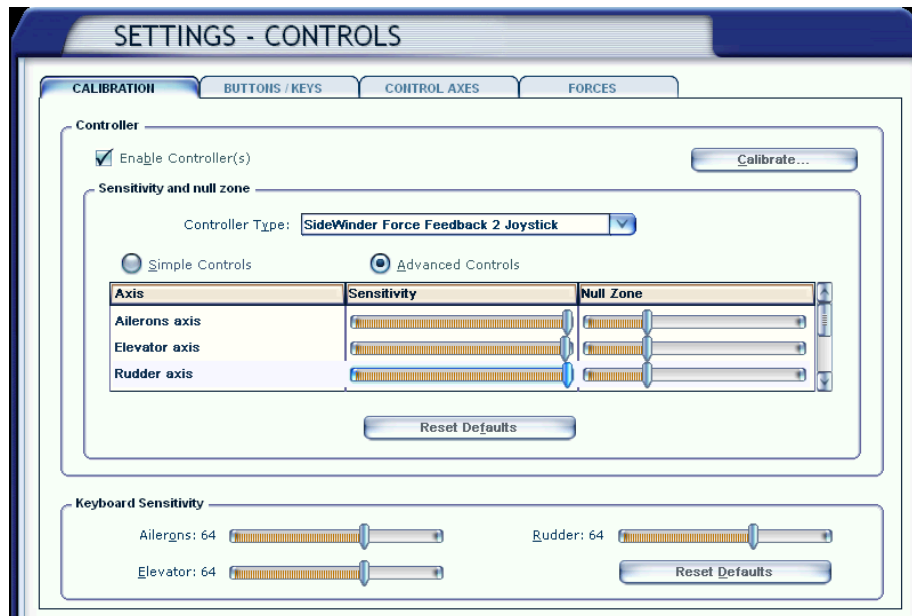
Picture 2: FSX Joystick Configuration for Airbus X EXT

Additionally the following „Buttons / Keys" should be assigned to the joystick. This makes it e.g. during the critical takeoff phase much easier to handle certain functions as it is not necessary to take the hand off the joystick to perform certain actions using the mouse or the keyboard. The functions recommend to assign to the joystick are brakes, views, flaps, spoilers and gear. Switching the Autopilot to ON do not work with assigned buttons or keys (only OFF like on the real Airbus side stick). The joystick settings can be changed in the FSX under Options / Settings / Controls / Buttons / Keys.

1.5   Simulation Rate / Time Compression:

Especially during longer flights often the "Simulation Rate" (FSX Menu Options) is changed to other settings than NORMAL to "shorten" the flight. For the Aerosoft Airbus X Ext it is not recommended (and at users own risk) to use a different simulation rate than NORMAL. The reason is that the flight avionics for the Aerosoft Airbus X Ext are completely newly programmed (not using any FSX standard features) and this avionics is not compatible with the time compression functionality FSX uses.

2. Panels and Instruments:

In the following paragraphs the panels or 5 fixed cockpit views (Glareshield – Main Panel, MCDU, ECAM, Pedestal / Radio and Overhead) are shown together with the terms used in the following tutorial. This enables the user to locate the knobs, switches and buttons to which the tutorial refers.

The Aerosoft Airbus X has no 2D-panel e. g. just a virtual cockpit. To ease the usage of this aircraft, 5 fixed virtual cockpit views have been created like Glareshield – Main Panel, left MCDU, ECAM, Pedestal / Radio and Overhead. Those views can be accessed using three different methods:
- FSX Menu: Views – View Mode – Cockpit – ……..
- Keyboard: F9 = Glareshield – Main Panel, F10 = ECAM / left and right MCDU, F11 = Pedestal / Radio and F12 = Overhead.
- Keyboard: F9 = Glareshield – Main Panel and then "A" to toggle between the various views like left MCDU, right MCDU, etc.

Picture 3: Default VC view, selected with the [S] key and where needed cycled to this view with the [A] key.

Picture 4: Main Panel and Glareshield View (similar to a 2D panel) selected with [F9]

Picture 5: ECAM and Upper Pedestal view, selected with [F10]

Picture 6: Pedestal view, selected with [F11]

Picture 7: Overhead view, selected with [F12]

There is also a Panelbar available which allows you to get fast access to a lot of other fixed predefined views – please see chapter 4.6 (OPTIONS).

Using the various keyboard combinations (please see details below) all views can be changed
- For all views the eye point can be changed except: 2 D Glareshield, 2D MCDU, Radio and TCAS
- For all views a "Pan Reset Function" is integrated e. g. after re-opening the view again the original view is reset. This is important so that for some very special views like the FCU, Pedestal, Overhead etc. the views do not end "somewhere" if opened again.

First open it e. g. to become the active window. Then the following key combinations are available:
- CTRL + Return   - Left
- CTRL + Backspace   - Right
- CTRL + SHIFT + Return   - Forward
- CTRL + SHIFT + Backspace   - Backwards
- SHIFT + Return   - Higher
- SHIFT + Backspace   - Lower
- SPACE BAR + Mouse wheel   - Zoom in or out
- SPACE BAR + Mouse   - Changing the view angle

2.1   Glareshield and Main Panel

Picture 8: Glareshield and Main Panel (F9)

1 = PFD (Primary Flight Display)
2 = ND (Navigation Display)
3 = EFIS (Electronic Flight Information System)
4 = FCU (Flight Control Unit)
5 = E/WD (Engine- and Warning Display)
6 = Brakes
7 = Chronometer
8 = Dimmer for PFD and ND
9 = Master Warning and Master Caution Lights
10 = A/Skid & Nose Wheel Steering
11 = Brake Fan

2.1.1. PFD - Primary Flight Display
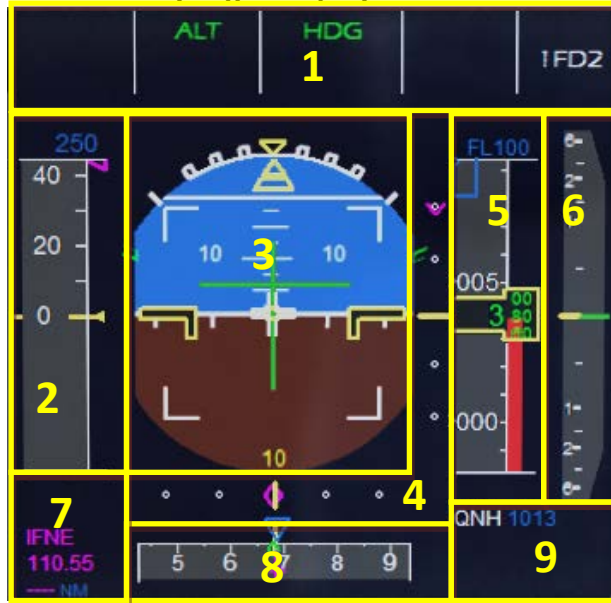
Picture 9: PFD – Primary Flight Display

1= FMA – Flight Modus Annunciator

2 = Speed Indicator

3 = Attitude Indicator – Artificial Horizon - Flight-Director Indicator

4 = Lateral and Vertical ILS Glide Path

5 = Altitude Indicator

6 = Vertical Speed Indicator

7 = ILS Identification

8 =Heading and Track Indicator

9 = Air Pressure

2.1.2. ND – Navigation Display

Picture 10: ND – Navigation Display

1= Speed (Ground Speed / True Air Speed) and wind (direction / speed)

2 = Next waypoint, degree, distance, time of arrival

3 = Lateral flight path

2.1.3. EFIS – Electronic Flight Information System

Picture 11: EFIS – Electronic Flight Information System

1 = Air Pressure Display   5 = ND mode setting knob
2 = AP (Hg or hPa selector and setting knob)   6 = ND range setting knob
3 = Flight Director / ILS   7 = ADF / VOR 1 and 2 switch
4 = Flight Plan Information on ND

2.1.4. FCU – Flight Control Unit

Picture 12: FCU – Flight Control Unit

1 = Speed (display and setting knob)   6 = ILS lateral localizer
2 = Heading (display and setting knob)   7 = Auto throttle
3 = Altitude (display and setting knob)   8 = Expedite
4 = Climb / Descent (display and setting knob)   9 = Approach ILS lateral / vertical localizer
5 = Autopilot 1 and 2   10 = Heading Track / V/S Flight Path switch

2.1.5. E/WD – Engine- and Warning Display

Picture 13: E/WD – Engine Warning Display

1 = Engine Information
2 = FOB = Fuel on board
3 = FLAPS Status
4 = Status Information, Start-Menu or Landing-Menu

2.2   Overhead Panel
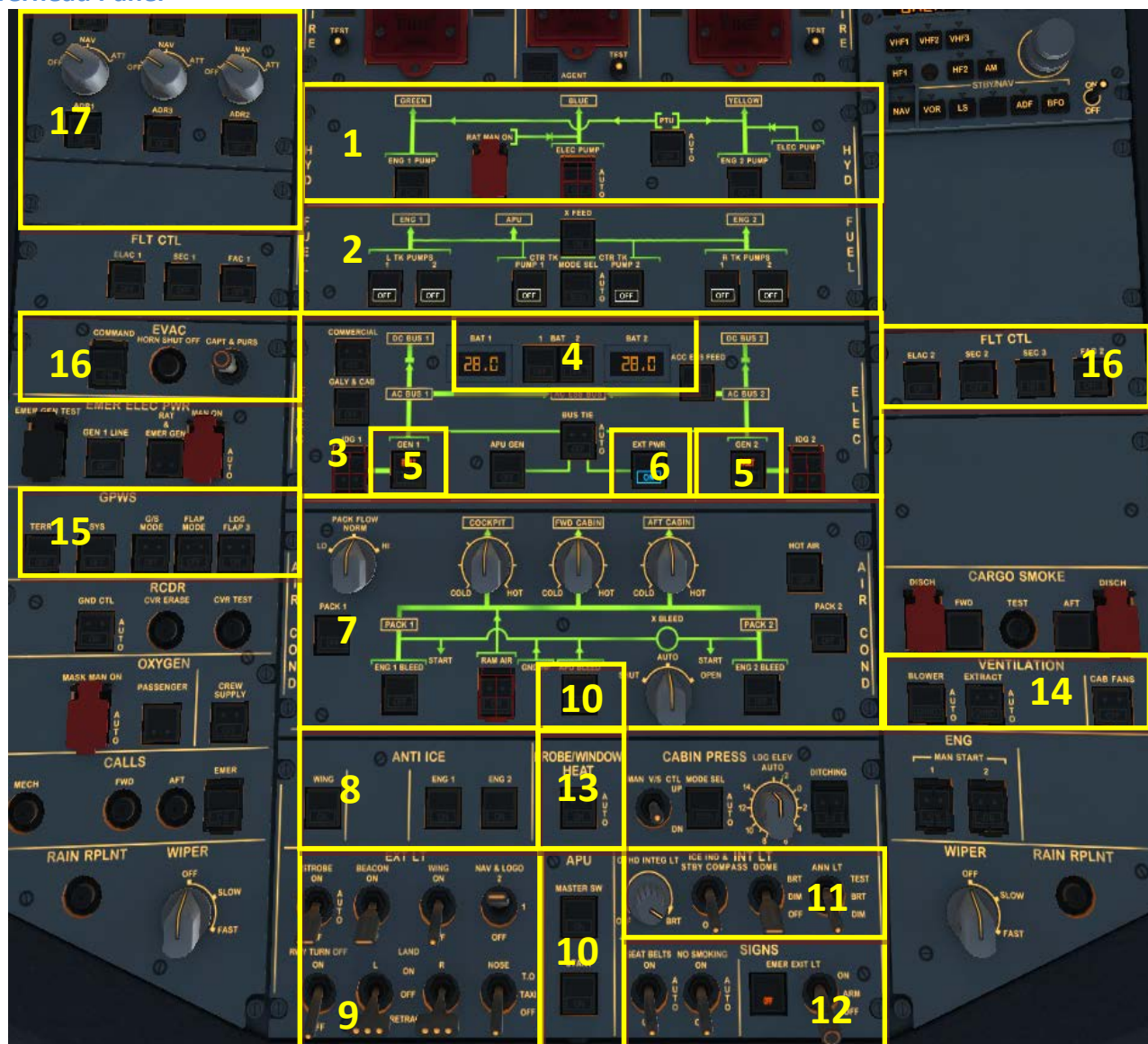
Picture 14: Overhead Panel (F12)

1 = Hydraulic Panel
2 = Fuel Panel
3 = Electric Panel
4 = Batteries 1 and 2, Voltage
5 = Generators 1 and 2
6 = External Power
7 = Air Condition Panel

8 = Anti-Ice-Panel
9 = External Lights
10 = APU-Master / -Start & -Bleed
11 = Internal Lights (Cockpit – Test)
12 = Signs (No Smoking, Seat B. and
        Emergency)
13 = Probe Window Heat

14 = Ventilation
15 = GWPS (Ground Proximity
        Warning System)
16 = Emergency Flight Control System
17 = ADIRS

2.3   FMGC - MCDU – Multifunction Control and Display Unit

Picture 15: MCDU (SHIFT+7)

1 = Display
2 = LSK 1-6L = Line Select Key 1-6 left
3 = LSK 1-6R = Line Select Key 1-6 right
4 = Scratch pad
5 = Page keys
6 = Keyboard (numeric)
7 = Keyboard (alphabetic)
8 = Switch for input via PC keyboard

2.4   ECAM (Electronic Centralized Aircraft Monitoring)

Picture 16: ECAM (F10)

1 = ECAM (Electronic Centralized Aircraft Monitoring)
2 = Gear
3 = MCDU - Multifunction Control and Display Unit – left and right
4 = Dimmer for Upper and Lower ECAM Display
5 = ECAM Panel

2.5   Pedestal

Picture 17: Pedestal (F11)

1 = Radio
2 = Audio
3 = Cockpit Panel Light
4 = Pitch Trim and Thrust Levers
5 = Engine Mode and Master
6 = Spoiler / Speed Brakes Lever
7 = Parking Brakes
8 = Flaps Lever
9 = Transponder
10 = TCAS - Traffic Alert and Collision Avoidance System

3.   General Information / Tips:

3.1   Additional Information:

Users who want to get full and accurate information on this very complex product, its systems and functionality will find a lot of information in the various manuals which you will find under Start / All programs / Aerosoft / Airbus X Ext. or in the FSX-folder under Aerosoft /Airbus X Ext. / Documentation.

3.2   Pictures:

The following description of the tutorial flight and its steps refers to the previously mentioned pictures and terms so that it is easier to find the knobs, switches and buttons.

3.3   Procedure- and Checklist:

Based on the original Airbus A320 CFM procedure- and checklist an in content and sequence modified procedure- and check list has been prepared for the Aerosoft X Ext A320 CFM. Those lists are part of and used in this tutorial and as well in the checklist functionality (please see chapter 4.7 and chapter 5.1 for details).

3.4   Switching ON and OFF functionality – changing values

To switch a button, knob or switch to ON, please use the left mouse button – whereas to switch it to OFF please use the right mouse button. To change a "value" just use the mouse wheel.

3.5   Saving a certain flight state

You are able to save any flight state with the Aerosoft Airbus X Ext. Please use the main page on the right MCDU and LSK4R - ACFT STATE for this purpose. With LSK6L - SAVE USER STATE you are able to save different state and using LSK5L - LOAD USER STATE you can select a certain previously saved state. We recommend using this functionality only after Cockpit Preparation, Engine Start and Take Off. But those privately saved states **cannot** be used in connection with the Checklist and Copilot functionality.

3.6   Saving flight plans and MCDU state

The Airbus X Extended defaults to the realistic company route format e. g. flight plans (except departure runway, SID, arrival runway and STAR / TRANS) can be saved and loaded. After entering the complete flight plan into the MCDU change to MCDU Menu and select a name for that flight plan like EDDFLOWW01. The save will be confirmed. If you want to use this flight plan just enter the given name into the scratchpad on the INIT A page and then press LSK1L (CO RTE = Company Route).

But if you prefer to save your company routes with the runways and SID/STAR it will allow you to do so by editing a configuration file. Look for the FMGS.ini file in the My Documents\Flight Simulator X Files\ AerosoftAirbusExtended folder. You will find:
[CoRte]
FullRoute=0
Default is [0] indicating it will save realistic company routes. Change it to [1] and it will save the complete but slightly less realistic flight routes.

It is planned and will be implemented in SP1 to save and load also complete MCDU states.

3.7   Sound (background)

Using the right MCDU pages "MCDU2 MENU" and "SOUND" there are three background sounds available CABIN CREW, FLIGHT CREW and ATC. To use those sounds just click on the respective LSK and the description changes to green = ON.

3.8 RUNWAY AWARENESS AND ADVISORY SYSTEM (RAAS)

RAAS Professional for use with the Aerosoft Airbus X Ext is included in the package. It will be automatically installed after the Airbus X Ext has been installed. The system comes with a configuration tool that allows you to change the settings. You can find this configuration tool in the FSX ADDON drop down menu.
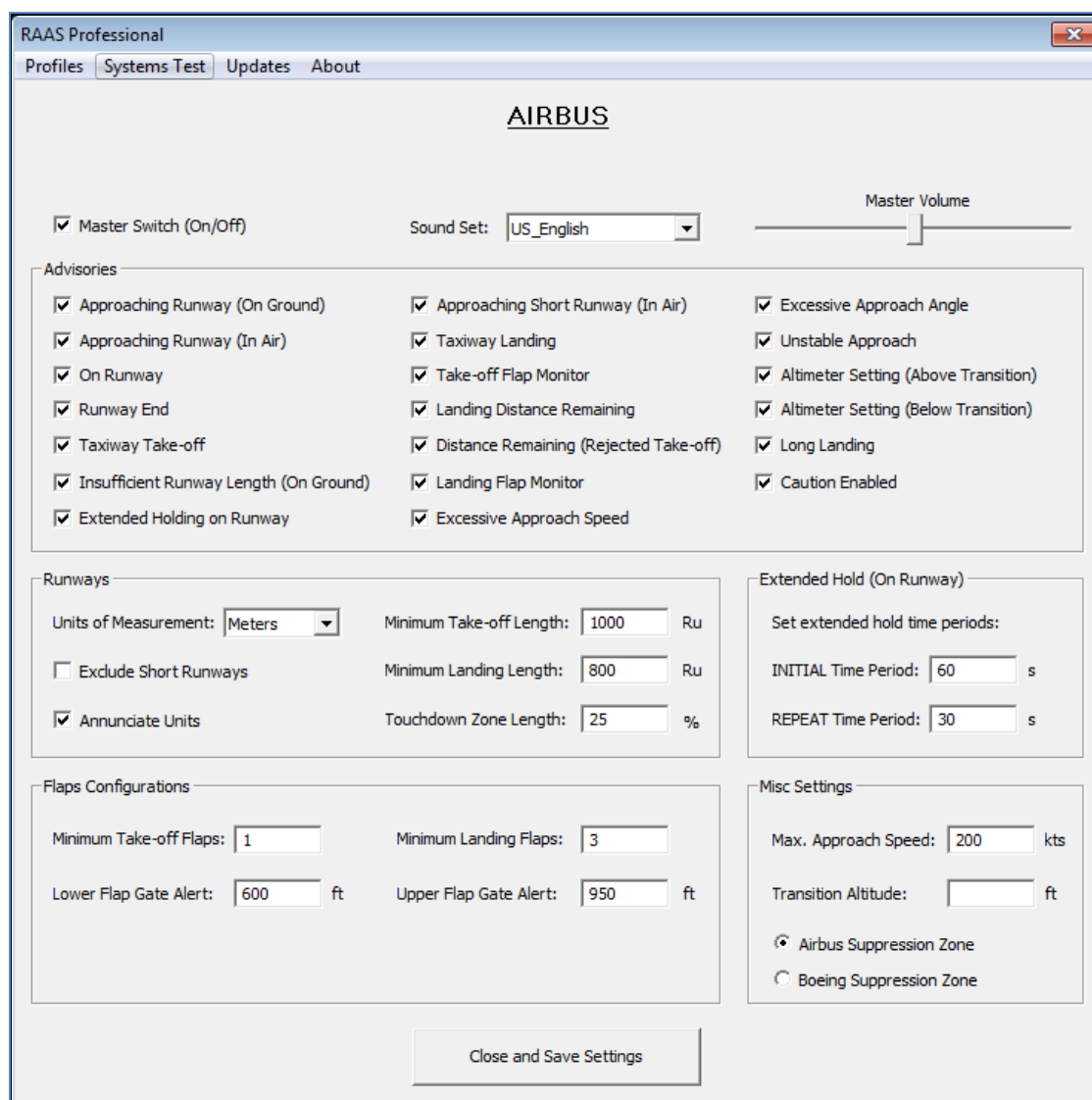
Picture 18: RAAS menu options

The default settings are correct for the Airbus X Extended, but you might like to change them. Only the Transition Altitude has to be entered because it differs between areas in Europe, if you always fly in the US you can set this to 18.000 ft. The runway length is the minimum for a very light Airbus, if you fly long routes you might use 1350 and 1100.

It uses the standard MS FSX database for runways. But sometimes updated runways are content of an additional scenery like Aerosoft Mega Airport Frankfurt (runway 07L was added and former 07L changed to 07C). To update RAAS in this respect please run Peter Dawson's "Make Runways". It is freeware and can be downloaded from his website.

3.9 Tutorial Flight with Aerosoft A320 CFM:

The flight goes from Frankfurt (ID: EDDF- ATIS – frequency = 118.025) to Vienna (ID: LOWW - ATIS-frequency = 121.725) and the following original flight plan will be used:

EDDF – **SULUS UZ650 VEMUT UZ37 BUDEX UZ205 VENEN** – LOWW

Picture 19: Flightpath Frankfurt EDDF to Vienna-Schwechat LOWW

It is a "real" one also used by commercial airlines. The terminology of the above flight plan is as follows: We are flying from Frankfurt (EDDF) to the first waypoint SULUS and then using the airway UZ650 until the waypoint VEMUT. From there we are using the airway UZ37 to BUDEX and then the airway UZ205 to VENEN. From VENEN we are then flying to Vienna (LOWW).

If you want to use such as the a.m. "real" flight plan for further flights, those plans are available on various websites – e.g. http://www.edi-gla.co.uk/fpl/search.php. To find aeronautical charts a very good choice might be also www.skyvector.com .

To reach our first waypoint (SULUS) from Frankfurt (EDDF) we have to use a SID (**S**tandard **I**nstrument **D**eparture airway). From all big airports there are such SIDs available depending on the takeoff-runway and first waypoint of the flight plan. The same is valid for our arrival in Vienna (LOWW). There are various STARs (**St**andard **A**rrival **R**outes) as well as TRANS (**trans**itions from the last STAR waypoint to the runway) available depending on the last waypoint of the flight plan (VENEN) and the landing runway.

How to enter this flightplan into the MCDU is explained in chapter 5.4. In any case the flightplan has to be manually entered into the MCDU. There is no way to import a flightplan.

4.   Flight Preparation:

4.1   Fuel and Payload Planning:

A planner for passengers, cargo and fuel is included in this package. After installation you should find the respective icon on your desktop (the installer will have added a shortcut on your desktop but you can also find the program in your FSX Main Folder under Aerosoft / Airbus X Extended / Aerosoft.AirbusX.FuelPlanner.exe. Please start the Fuel- and Payload-Planner and it will open in "Simple Mode".

- Please select in "Aircraft Type" = **A320**
- Set the passenger load to 100 Pax
- Set the cargo load to 6.000 kg
- Set the trip duration to 1:30 hour
- Set the "UNIT" = **Kg**
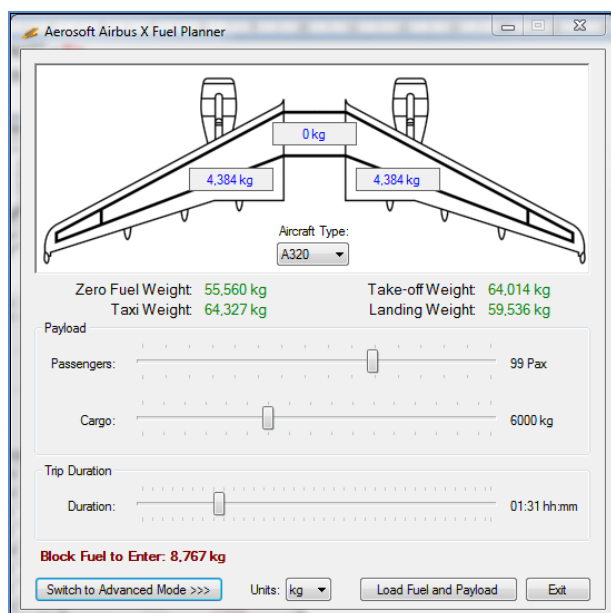
Picture 20: Airbus X Fuel Planner (simple planning mode)

If you want to make more detailed settings just open the "Advanced Mode".

Please check if all of the "Weight" values are shown in "green" e. g. are within the limits for the Airbus.

To "Load Fuel and Payload" the FSX should be running and the Aerosoft Airbus X Ext A320 CFM already loaded. Then the values in FSX / Airbus X Ext will be adjusted accordingly. Please note that there might be small differences between the values the "Fuel- and Payload-Planner" and FSX is stating.

Empty weight	41.244 kg
Payload	14.316 kg
Zero Fuel Weight	**55.560 kg**
Fuel	8.767 kg
Gross = Taxi weight	**64.327 kg**

Picture 21: Total weight settings in Load-Manager

Please just use the Aerosoft X Airbus Fuel – and Payload-Planner only and not the FSX functionality to "load" the plane because e.g. the method of filling the tanks is different and the Aerosoft planner is adjusted to Airbus methodology.

4.2 Calculation of Takeoff Performance Data:

For programming the MCDU certain Takeoff Performance Data (ZFWCG, ZFW, BLOCK FUEL, FLEX and THS, V1, VR and V2) are required. In the original Airbus MCDU those data manually have to be entered by the crew during the flight preparation (based on various loading- and calculation sheets). In the Airbus X EXT those data are automatically calculated by the MCDU and displayed in the respective fields. Please note that V1, VR and V2 can only be calculated after the flaps setting for takeoff is entered into the MCDU.

The calculation of those data in the Airbus X Ext is based on a program written by Roland Wukovits and integrated into the MCDU.

4.3 MCDU 2 MENU - ACFT STATE – Aircraft State Menu
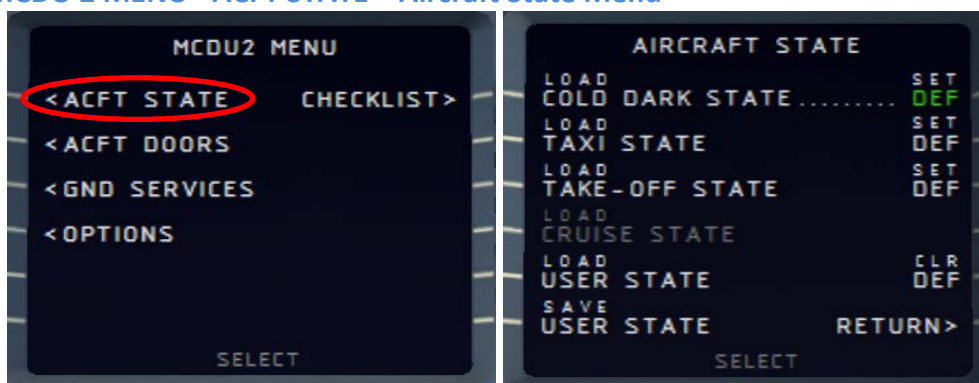
Picture 22: Aircraft State Menu

To use the CHECKLIST and the COPILOT functionality it is necessary to load one of the menu – states (not a saved user state). You access this menu via the MCDU 2 Main Menu by selecting ACFT STATE. Please load **COLD DARK STATE** and the aircraft is configured as you would find it on the first flight of the day, all systems are off.

After setting the aircraft to "COLD & DARK" also the screen for the MCDU 2 is dark (because of no power). To power the plane up (as well as the MCDU 2 screen):

- Overhead Panel [F12] switch both batteries to ON section 4 (chapter 2.2)
- Overhead Panel [F12] switch External Power to ON section 6 (chapter 2.2)

To power up the various screen (PFD, ND, upper and lower ECAM) please switch on the respective panel lights (Glareshield #8 and ECAM #4) as well as if necessary the "night" illumination using Pedestal #3.

It is possible every time an Airbus X EXT is loaded that it is loaded already with a certain state. E.g. if you want the plane always to be loaded as COLD DARK so please use the option DEF (LSK 1 R). If the option is selected DEF will be marked in "green" (please see the picture above). To deselect the option just press LSK 5 R. Please note that one in FSX saved "Free Flight" (includes also a defined panel state) overrides this functionality.

If you are loading the TAXI and TAKEOFF states please be aware that the engines are already running with a little bit of thrust i.e. app. 27.8 N1. This is enough to make the plane already moving slowly. If you want to program the MCDU before TAXI or TAKEOFF, then please set the parking brakes after loading the state.

In case you want to use the Checklist- and Copilot functionality with TAXI and TAKEOFF states then please first program the MCDU and set the Checklist- and Copilot functionality afterwards to ON.

The aircraft state "CRUISE" is available only if the plane is already in the air, whereas then all the other states like "COLD DARK", "TAXI" and "TAKEOFF" then are no longer available.

4.4   ACFT DORS – Aircraft Doors Menu
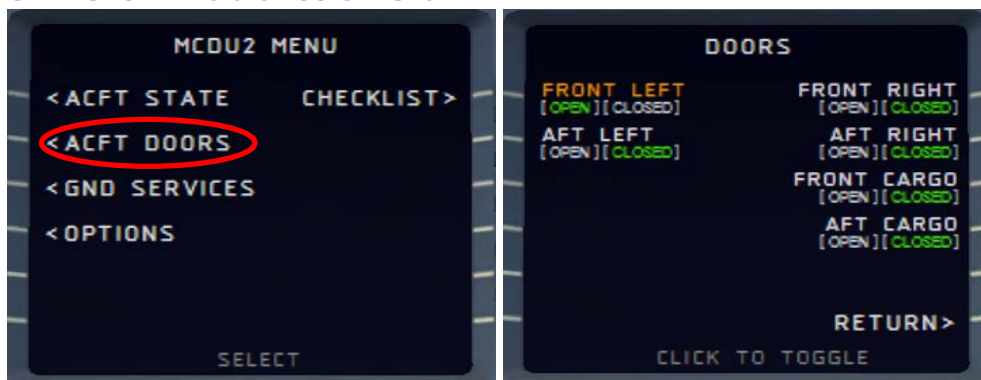
Picture 23: Aircraft Doors Menu

You access this menu via the MCDU 2 Main Menu by selecting ACFT DOORS. The DOORS option allows you to open the doors and cargo hatches. If a door is open the specific door is marked in "orange" and the situation highlighted in "green". To close / open a door just click on the specific LSK (line select key) in our case to close the FRONT LEFT door just use LSK 1 L. Check if the FRONT LEFT door is at least opened (should be opened automatically if you previously loaded the ACFT STATE "COLD & DARK"). Other doors can be opened optional.

4.5   GROUND SERVICES – Ground Services Menu
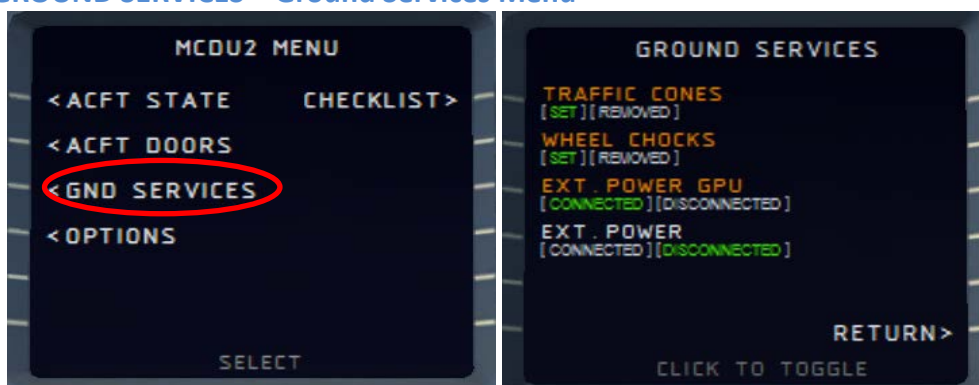
Picture 24: Ground Services

You access the menu via the MCDU 2 Main Menu by selecting GROUNDSERVICES. The menu is available only if the Wheel Chocks are SET or if the Parking Brake is ON (e. g. the aircraft now can park without Parking Brakes set to ON).

The various options are only available if the following conditions are met:
- CHOCKS: Parking Brake is set to ON
- CONES: Only if CHOCKS are SET
- EXT POWER: Parking Brake is ON or Chocks are SET

The Ground Services menu allows you to select various options. If an option is used the specific option is marked in "orange" and the situation highlighted in "green". To select an option just click on the specific LSK (line select key) in our case to disconnect the EXT POWER GPU just use LSK 3 L. Check if the EXTERNAL POWER GPU is at least available (should be available if you previously loaded the ACFT STATE "DARK & COLD"). The other options can be selected optional.

4.6   OPTIONS – Options Menu
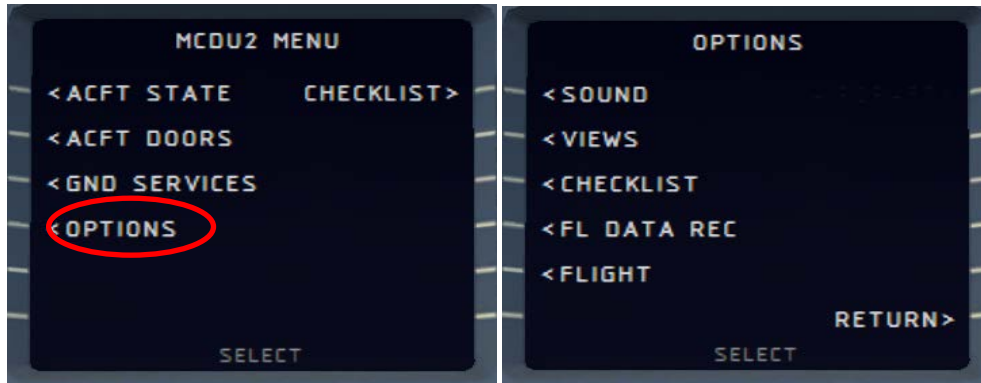
Picture 25: Options Menu

4.6.1   OPTIONS - SOUND

Picture 26: Sounds Configuration Menu

CABIN CREW
Background sounds by the cabin crew (purser) like "Captain, all passengers are on board and the cabin is secured"

FLIGHT CREW
Background sounds by the flight crew like browsing in manuals, sneezing etc.

ATC
Background sounds from Air Traffic Controllers – instructions to other planes. There are 5 different channels integrated (Ground, Tower, Departure, Center and Approach) playing according to the flight status.

Those options can be selected by clicking on the relevant left "LSK - Line Selection Key". The relevant situation (ON or OFF) is highlighted in "green".

ENH GPWS – Enhanced Ground Proximity Warning System
If "ENH GPWS" is switched to ON the following sounds – callouts will be played:
- "2500"
- "1000"
- "500"
- "300"
- "70"
- "60"
- "10"
- "5"
- "10 Retard" (during flat pitch in flare)
- "100 Above" (100 feet above DH)

4.6.2 OPTIONS - VIEWS
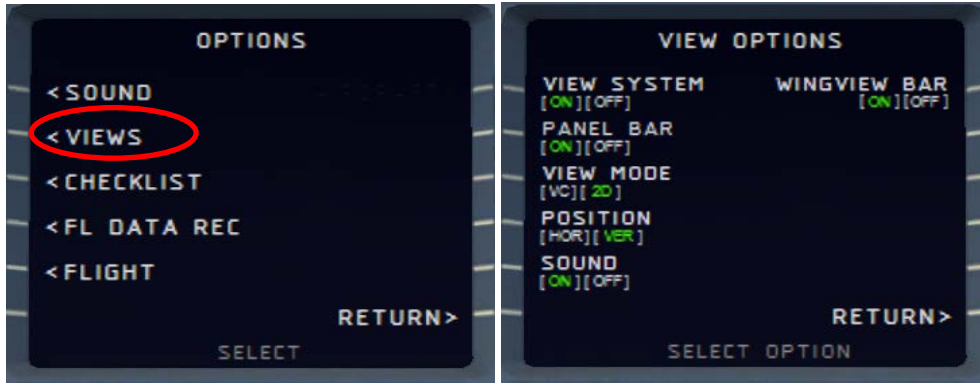
Picture 27: View Configuration Menu

VIEW SYSTEM

The VIEW OPTION can be completely disabled so that there are no interferences for users who use TrackIR and EZDOC.

PANEL BAR

There is also a Panelbar (can be customized using the right MCDU – MCDU MENU – OPTIONS - VIEWS) integrated in this version of Airbus X. Those options can be selected by clicking on the second left "LSK - Line Selection Key". If selected the ON respectively OFF is highlighted in "green".

There are two different types of panel views available: The VC- and the 2D-mode and each with day and night views (automatically selected according to the flight time).

VIEW MODE = VC (Virtual Cockpit Views)
16 views with pictures (day and night versions)

Picture 28: VC Panel Bar (day and night version)

The VC-mode bar can be closed or opened again clicking on the "grey" triangle left and right on the bar. The views 11 to 17 can be accessed using the mouse wheel. To access the ADIRS view just select the Overhead view and then use the right mouse button.

VIEW MODE = 2D (Two Dimensional Cockpit Views)
11 views with pictures (day and night versions)

Picture 29: 2D Panel Bar (day and night version)

The 2D-mode bar can be closed or opened again clicking on the "grey" triangle left on the bar. The views 8 to 12 can be accessed using the mouse wheel. To access the upper overhead panel and ADIRS view just select the overhead view and then use the right mouse button.

POSITION (VERTICAL or **HORIZONTAL)**
The bar can be either displayed horizontal or vertical on the left upper corner of the screen.

VERTICAL   HORIZONTAL

Picture 30: Horizontal Panel Bar

Picture 31: Vertical Panel Bar

WINGVIEW BAR
The bar can be either displayed horizontal or vertical on the right upper corner of the screen. There are in total 10 different views available (1 to 6 please see below). The views 7 to 10 can be accessed by going with the mouse to the respective view then using the mouse wheel and clicking on it.
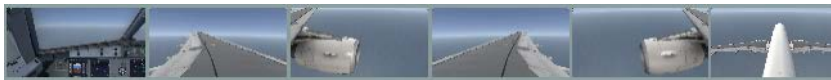
Picture 32: Wing View Bar

The bar can be closed or opened again clicking on the "grey" triangle left and right on the bar.

4.6.3 OPTIONS - CHECKLIST
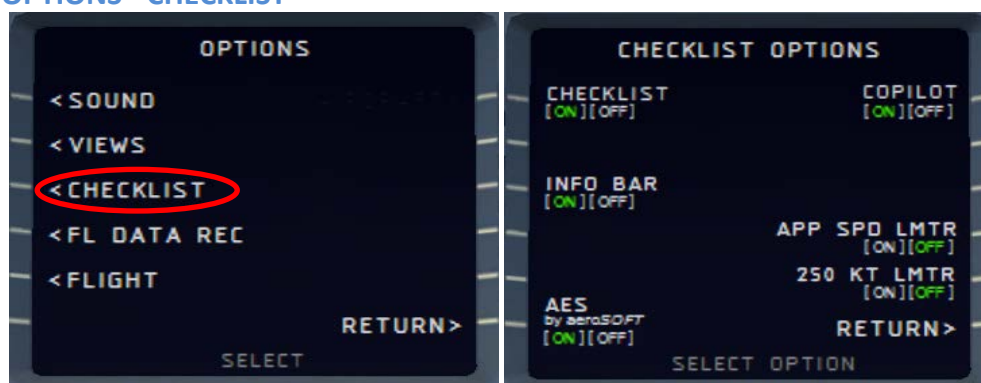
Picture 33: Checklists Configuration Menu

CHECKLIST

Also an automatic checklist (with sound) is included in this Airbus X version. This option can be selected by clicking on the first left "LSK - Line Selection Key". If selected ON respectively OFF is highlighted in "green".
The detailed checklist items you will find in chapter 5.2. etc. (marked in "green").

But before setting the status to ON an original Aerosoft Airbus X panel state – MCDU MENU – ACFT STATE - (not a user state) should be loaded, so that the system starts with right equivalent checklist state. In our case this should already have been done e. g. the aircraft is already set to "COLD & DARK".

The checklists are connected to the used aircraft state e. g. if the "Taxi State" is chosen (MCDU MENU – ACFT STATE) then after setting picture 4 LSK1L to "ON" the systems starts with the "Taxiing Checklist".

In case a checklist item is constantly repeated it means that the Airbus item setting is not correct and cannot be handled by the copilot (if functionality is used). Then please correct the settings manually and the checklist sequence will automatically be continued.

For our tutorial flight we will use the CHECKLIST functionality so please set it to ON (= green)

COPILOT

If the automatic checklist functionality is set to ON a copilot functionality (handling all actions performed by the PnF – pilot non flying) becomes available. This option can be selected by clicking on the first right "LSK - Line Selection Key". If selected ON respectively OFF is highlighted in "green".

There are 2 different possibilities / combinations possible to use the "Checklist" and "Copilot" option or just the "Checklist" option only.
- If only "Checklist" is chosen then the duties of the copilot have to be handled manually by the user.
- If the combination is chosen then the "Copilot" works timely aligned with the checklist i.e. performs his duties when the task should done according to the checklist. Only certain the items have to be handled manually by the user.

The detailed tasks performed by the Copilot you will find in chapter 5.2. etc. (marked in "yellow").

For our tutorial flight we will use the COPILOT functionality so please set it to ON (= green).

In case you want to use the Checklist- and Copilot functionality with TAXI and TAKEOFF states then please first program the MCDU and set the Checklist- and Copilot functionality afterwards to ON.

INFOBAR

If "CHECKLIST" is set to ON this option becomes available. And if "INFOBAR" is activated on top of the screen an info bar is displayed. This bar displays (based on the complete procedure list according to chapter 5.) the next manually to be set action.

Picture 34: Info bar

This information appears after you loaded the ACFT STATE "COLD & DARK" and the checklist- as well as the copilot functionality has been set to ON. "MCDU: START CHECKLIST OR USE KEY '1'" means you can start the "Cockpit Preparation Checklist" by clicking on the specific checklist in the options menu or just press '1' on your PC-keyboard.

Some checklists can only be started from the MCDU MENU – CHECKLIST like the "Cockpit Preparation Checklist". In such cases the content of the infobar also contains a hint which keypad key alternatively can be used to start the relevant checklist.

- Start "COCKPIT PREPARATION CL" using "1"
- Start "ENGINE START WITH PUSHBACK CL" using "1"
- Start "ENGINE START CL" using "2"

As we will use the CHECKLIST and COPILOT functionality for our tutorial flight you should set the INFOBAR to ON (= green).

AES

This functionality is also compatible with Aerosoft AES but does not automatically detect an airport where AES can be used. In such a case e. g. the AES-functionality for an airport is available and fully licensed a specific MCDU-setting is necessary. Then during pushback the conversation between PF (pilot flying) and Ground is aligned and the AES pushback functionality will be used.

APP SPEED LIMITER – (only available if COPILOT is set to ON)

If selected the copilot checks the speed limit of 250 knots (below 10.000 feet) and if this limit is exceeded, the copilot automatically (using the speed brakes) reduces the speed to 250 knots. This functionality works without any calls and in "Managed" as well as in "Selected" speed mode.

250 Knots LIMITER

If selected the copilot checks the speed limit of 250 knots (below 10.000 feet) and if this limit is exceeded, the copilot gives a warning. No action is taken automatically.

4.6.4   OPTIONS – FLIGHT DATA RECORDER
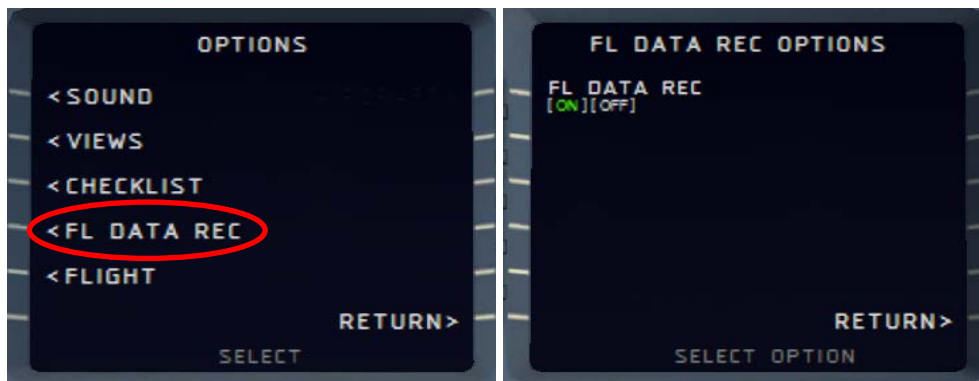
Picture 35: Flight Data Recorder

Using this menu it is possible to switch ON and OFF the Flight Data Recorder e. g. if set to ON the flight data will be automatically "recorded". To see those recorded data please open the AS-Flightrecorder. The system is saved in the FSX Main Folder under Aerosoft \ Flight Recorder \ AS-FlightRecorderManager.exe. After starting the recorder the following main screen opens showing all saved flight records.
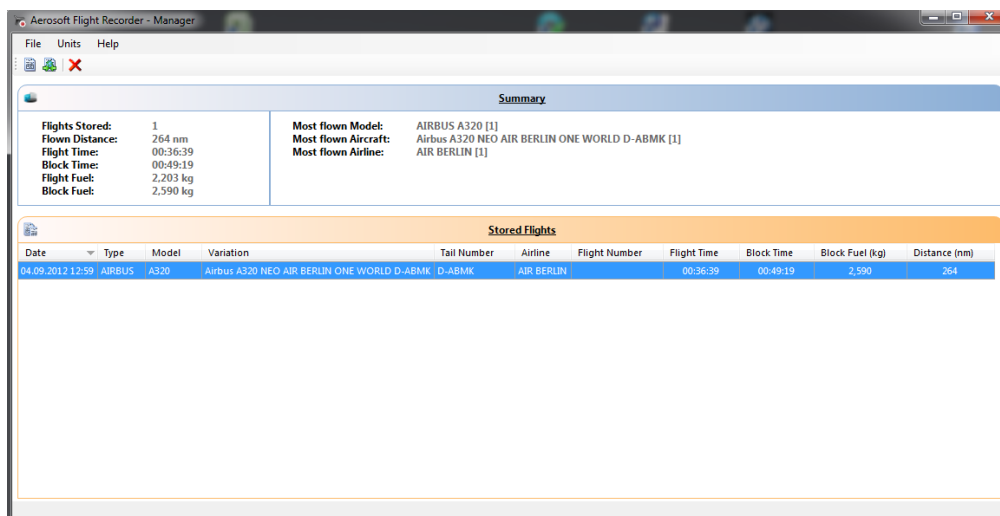
Picture 36: Flight Data Recorder Menu

Picture 37: Flight Data Recorder – Details –

More details on the Flight Data Recorder (DFDR) you will find in the documentation Volume 4 "Systems" section "Indicating / Recording systems" e.g. that the data can also be exported to GOOGLE EARTH (result please see Picture 19)

4.6.5   OPTIONS – FLIGHT
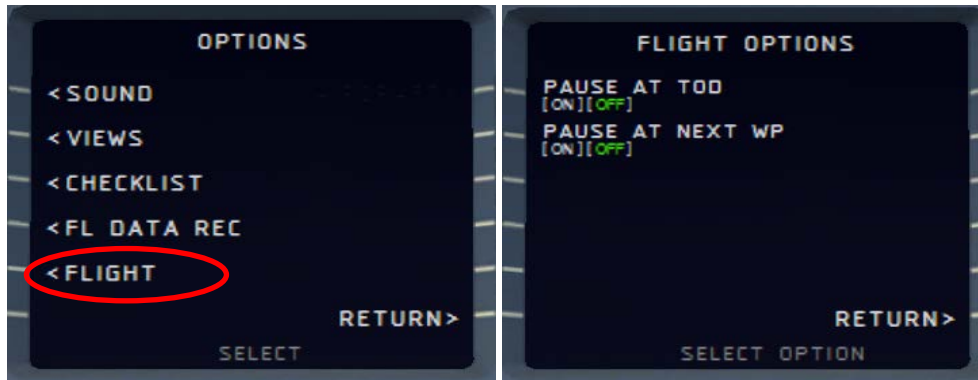
Picture 38: Flight Options

Using this menu it is possible to switch ON and OFF 2 different options to pause the FSX during a flight
- At Top of Descent (10 miles before T/D so that the DESCENT PREPARATION checklist can be completed before the descent really starts)
- At next waypoint

4.7   Checklist

The following Checklist Menu can be accessed via **right** MCDU – MCDU2 MENU.
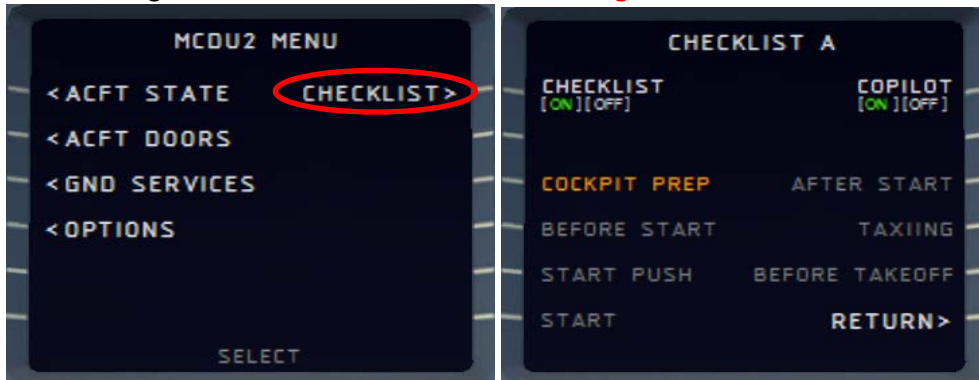
Picture 39: Checklists Menu (page A)

This menu shows all available checklists and contains the following functionality:
- According to the picture above you should start the "cockpit preparation checklist" (blinking in orange) by clicking on the respective line selection key = LSK3L
- Active checklists are displayed in "green".
- The blinking "info line" at the bottom of the screen shows what has to be done next and is identical with the text of the info-bar (please see chapter 4.6.3 for details).
- In such cases e. g. the checklist has to be started from the MCDU MENU – CHECKLIST the content of the infobar also contains a hint which keypad key alternatively can be used to start the relevant checklist.
  - o Start "COCKPIT PREPARATION CL" using "1"
  - o Start "ENGINE START WITH PUSHBACK CL" using "1"
  - o Start "ENGINE START CL" using "2"
- The checklist menu has two pages (A and B). To toggle between the two pages just push the MCDU arrow buttons showing left or right.

The following checklists are available and linked to the chosen Aerosoft standard ACFT STATE e. g. not to any saved user state.

- Cockpit Preparation
- Before Start
- Start with Pushback - *or* Start *(w/0 pushback)*
- After Start
- Taxiing
- Before Takeoff
- Takeoff
- After Takeoff

- Climb
- Cruise
- Descent Preparation
- Descent
- Approach
- Final Landing
- After Landing
- Parking

The detailed content of the checklists you will find in chapter 5.1 etc. (marked in "green").

4.8   Saving all settings

All in the MCDU2 made settings (except the use of the CHECKLIST- and the COPILOT-functionality) are saved e. g. the next time the Aerosoft Airbus X Ext is loaded you will start with all the settings from the previous flight.

5.   Tutorial Flight / Checklist and Procedures:

5.1   Basic Information - Setup

This tutorial flight describes all the phases of a flight from Frankfurt to Vienna, from the "DARK COLD" situation in Frankfurt to the landing at Vienna, parking and securing the aircraft.

During the tutorial flight we are using the Aerosoft A320 procedure- and checklist which is based on an original from Airbus. This list consists of a "running number" to indentify the action to be performed and in which panel, sub-panel the necessary knobs, switches and buttons can be found. The various panels available and their terms are explained in chapter 2. If additional explanations for the actions are necessary the row is marked in yellow and the explanations can be found below the respective procedure- and checklist using the "running number" as a reference.

Again using this tutorial the cockpit should be "dark & cold". After switching the batteries 1 +2 to ON it should look like in Picture 63. If there are still some light ON switch off all those lights on the Overhead Panel. Another option (which is necessary to use the Checklist- and Copilot functionality) is to load the plane and then go to the right MCDU view, MCDU MENU / ACFT STATE and select "COLD DARK STATE".

After setting the aircraft to "DARK COLD" also the screen for the MCDU 2 is dark (because of no power). To power the plane up (as well as the MCDU 2 screen):

- Overhead Panel [F12] switch both batteries to ON section 4 (chapter 2.2)
- Overhead Panel [F12] switch External Power to ON section 6 (chapter 2.2)

To power up the various screen (PFD, ND, upper and lower ECAM) please switch on the respective panel lights (Glareshield #8 and ECAM #4) as well as if necessary the "night" illumination using Pedestal #3.

Also the "CHECKLIST" and "COPILOT" functionality should already have been set to ON (=green). Please see chapter 4.7. Also certain "limiters" (for approach speed and 250 knots) are included in the copilot (PNF) functionality please see chapter 4.6 for details.

The different colors used in the following lists symbolize and explain the functionality:

Detailed description available – please see below -				
	Not supported by "Checklist" or "Copilot" functionality			
Starting Conditions for Checklist	Starting Conditions for Checklist			
1	Checklist – Check only	Checklist item	Copilot (announcem./ check)		Ground announcement
2	Checklist / Copilot – Action done by Copilot -	Checklist item	Copilot (action)	CoP	(if option "Copilot" is selected)
3	Checklist / Copilot - Action to be done "manually" -	Checklist item	User (action) - necessary		
4	Checklist / Copilot - Action to be done "manually" -	Checklist item	User (action)		

Now start this tutorial with the "Basic Preparation Procedure" as described in chapter 5.2.

5.2   Basic Preparation Procedure (aircraft in cold & dark state)

NO.	PANEL			ACTION		REMARK
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)	
1	FUEL PLANNER	SIMPLE METH.		PAX-, CARGO- and FUEL LOAD	SET and SEND DATA TO FSX	Please see chapter 4.1 for details
2	MCDU R	MAIN MENU	ACFT STATE	DARK COLD = LSKL1	PUSH	Should already been done
3	OVERHEAD	ELEC	3	BAT 1 + 2 (Batteries)	ON (BOTH)	Should already been done
4	OVERHEAD	ELEC	3	EXT POWER	ON	
5	OVERHEAD	EXT. LIGHTS	9	EXT. LIGHTS (= *Nav Lights*)	ON	
6	MAIN PANEL	PFD LIGHT	8	SWITCH	ON	
7	MAIN PANEL	ND LIGHT	8	SWITCH	ON	
8	ECAM	ECAM LIGHTS	4	SWITCH UPPER and LOWER	ON	
9	PEDESTAL	INT. LIGHT	3	OVHD INTEG LT	ON	
10	MCDU R	OPTIONS	SOUND	Cabin & Flight Crew, ATC	[ON] or [OFF]	As required – Color switches to green
11	MCDU R	OPTIONS	VIEWS	Panel & Wing View Bars and others	[ON] or [OFF]	As required – Color switches to green

12	MCDU R	OPTIONS	CHECKLISTS	CHECKL and COPILOT	**ON (BOTH)**		
13	MCDU R	OPTIONS	CHECKLISTS	INFOBAR	**ON**		
14	MCDU R	OPTIONS	CHECKLISTS	Various LIMITERS (APP & 250 KNOTS) & ILS	[ON] or [OFF]		As required – Color switches to green
15	MCDU R	OPTIONS	CHECKLISTS	AES	[ON] or [OFF]		As required – Color switches to green

9.   **Cockpit Lights:** Because sometimes the panels are quite dark – depending on the position of the sun – please switch the cockpit light to BRT.

5.3   Cockpit Preparation

COCKPIT PREPARATION							
NO.	**PANEL**			**ACTION**			**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
16	MCDU	MAIN MENU	CHECKLIST	A = PUSH LSK1L	PUSH		**Start Checklist / Co-Pilot - if selected**
17	OVERHEAD	ELEC	3	BAT 1 + 2 (Batteries)	CHECK ON (BOTH)	Cop	
18	OVERHEAD	ELEC	6	EXT PWR (External Power)	ON	CoP	(if available – see MCDU MENU / DOORS)
19	OVERHEAD	EXT. LIGHTS	9	NAV. LIGHTS	CHECK ON	CoP	
20	PEDESTAL	ENG	5	ENG MASTER 1 + 2	CHECK OFF	CoP	
21	PEDESTAL	ENG	5	ENG MODE SEL	CHECK NORM	CoP	
22	ECAM	LAND GEAR	2	LANDING GEAR LEVER	CHECK DOWN	CoP	
23	PEDESTAL	P. BRAKE	7	PARKING BRAKE	CHECKED = OFF	CoP	
24	PEDESTAL	FLAPS	8	FLAPS LEVER	CHECK POSITION = 0	CoP	
25	PEDESTAL	SP. BRAKE	6	SPEED BREAK LEVER	CHECK RET. AND DISARMED	CoP	
26	PEDESTAL	THR LEVER	4	THRUST LEVERS	CHECK IDLE		
27	PEDESTAL	TCAS	10	TRANSPONDER MODE	STANDBY	CoP	Test then Standby Pos.
28	PEDESTAL	RADIO	1	RADIO CONTROL PANEL	ON	CoP	
29	ECAM	ECAM	5	ECAM RECALL (RCL) BUTTON	PRESS	CoP	
30	MAIN PANEL	ANTI SKID	10	ANTI SKID	CHECK ON	CoP	
31	MAIN PANEL	EFIS	3	FLIGHT DIRECTOR	CHECK ON	CoP	
32	OVERHEAD	SIGNS	12	EMERGENCY LIGHTS	ARM	CoP	
33	OVERHEAD	SIGNS	12	NO SMOKING SIGNS	AUTO or ON	CoP	
34	OVERHEAD	SIGNS	8	WING & ENGINE ANTI ICE	CHECK OFF	Cop	
35	OVERHEAD	PR.WI. HEAT	13	PROBE WINDOW HEAT	AUTO/OFF		
36	OVERHEAD	AIR COND.	7	HOTAIR, ENG. BLEED L+R, PACKS L+R	CHECK ON	Cop	(no white signs)
37	OVERHEAD	VENTILATION	14	BLOWER, EXTRACT, CAB. FANS	CHECK ON		(no white signs – INOP not animated)
38	OVERHEAD	ELETRIC	5	ENG. GENERATOR L+R	CHECK ON = FAULT	Cop	
39	OVERHEAD	ELETRIC	5	APU GENERATOR	CHECK ON		(only if EXT. POWER is ON)
40	OVERHEAD	FUEL	2	ALL FUEL PUMPS	PRESS	CoP	OFF should disappear
41	OVERHEAD	FUEL	2	ALL FUEL PUMPS = ON	CHECK		
42	OVERHEAD	HYDRAULICS	1	ELEC. YELLOW HYDR. PUMP	ON	CoP	
43	OVERHEAD	GPWS	15	ALL SWITCHES	CHECK ON	Cop	(no white signs)
44	OVERHEAD	EFCS	16	ALL SWITCHES	CHECK ON	Cop	(no white signs)
45	OVERHEAD	ADIRS	17	ADIRS (3x)	ON	CoP	
46	COCKPIT	EM.EQUIPMENT		ALL EQUIPEMT AVAILABLE AND OK	CHECK ON		**Checklist complete**
47	PEDESTAL	RADIO	1	SET FREQUENCIES	SET		If ATC is used
48	PEDESTAL	RADIO	1	ATC CLEARANCE	OBTAIN		If ATC is used

16.   **Start Checklist:** Alternatively you can also use "1" from the keyboard to start the checklist.
40*.*   **Fuel Pumps:** If **no** external power is used – in our tutorial we use external power # 18 - even after switching the fuel pumps to ON the warning FAULT will remain, because they are not yet running. FAULT will automatically disappear when the engines are running up. All "white" lights should be extinguished.
42.   **HYDR. PUMPS:** Only if accumulator pressure is below 500 PSI
45.   **ADIRS:** All three switches have to be set to NAV
47.   **RADIO – SET FREQUENCIES –** As the ATIS frequency for Frankfurt is 118.025 set the VHF1 frequency in STBY/CRS to 118.025 (using the mouse wheel you can select on the outside knob the figures from 118. to 136. and with the inside knob between .000 and .975). Then press on the green arrow to switch the previously entered value from STBY into ACTIVE. After a short period you will hear the ATIS information (weather, winds, pressure and runways in use etc.). After all necessary information has been obtained press the switch again.

AES: The loaded "DARK COLD" aircraft state is with parking brakes = OFF and chocks = SET (parking brakes are normally OFF to cool down the brakes). AES currently does not recognize "chocks = SET" and

requires "parking brakes = ON" to start it is necessary to set the parking brakes = ON to start AES with the right situation. Then open the AES window (CTRL+SHIFT+W) and select the option "F5 – Request Boarding now"

5.4 FMGS / MCDU – Data Insertion

Always use the following sequence for the data insertion into the MCDU: INIT A page, F-PLN, RAD NAV, INIT B page, PERF = **IFRIP**.

COCKPIT PREPARATION – FMGS/MCDU DATA INSERTION					
NO.	**PANEL**			**ACTION**		**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)	
48	MCDU	INIT 1		DEP and DEST AIRPORT	**ENTER**	EDDF/LOWW
49	MCDU	INIT 1		ALIGN IRS	**PRESS**	
50	MCDU	INIT 1		FLT NBR (Flight Number)	**ENTER**	LH320
51	MCDU	INIT 1		COST INDEX	**ENTER**	40
52	MCDU	INIT 1		CRZ FL (Cruise Flight Level)	**ENTER**	=310 (31.000 feet)
53	MCDU	F-PLAN		FLIGHTPLAN	**ENTER**	Speeds and altitudes are now calculated
54	MCDU	RAD NAV		ENTER VOR 2 FREQUENCY	**ENTER**	FFM
55	MCDU	INIT 2		BLOCK	**ENTER**	8,7
56	MCDU	INIT 2		ZFWCG/ZFW	CHECK	25.0/55.6
57	MCDU	PERF-TO		FLAPS / THS	**ENTER**	1/
58	MCDU	PERF-TO		FLEX TO TEMP	CHECK	63
59	MCDU	PERF-TO		V1, VR and V2	CHECK	145/149/150
60	MCDU	PERF-CLIMB		DATA	CHECK	
61	MCDU	PERF-CZR		DATA	CHECK	
62	MCDU	PERF-APPR		DATA	CHECK	
63	MCDU	PERF-GO ARD		DATA	CHECK	

Open the MCDU. In case the data or menu page is displayed; use the INIT button so that page INIT A opens (INIT B only can be opened if the engines are not running). The data input can either be done using the scratchpad or the PC keyboard. To use the PC keyboard please just "left" click on the grey field beside '1' on the scratchpad. The change will be confirmed "KEYBOARD INPUT ON". To change back to the MCDU scratchpad "right" click on the same spot again.

48. **FROM/TO:** Enter EDDF/LOWW into the scratchpad and then press LSK1R.
XX. **ALTN:** We will not use this function e. g. to enter an alternative airport for Vienna. For details please see the detailed MCDU guide.
49. **ALIGN IRS:** Please press LSK 3R to start the IRS (Inertial Reference System). Aligning the IRS will take 6 minutes and the status is displayed on the E/WD in the status section. If the IRS is aligned the PFD and ND change to the standard view.
XX. **CO RTE – ALT/CO RTE:** Leave CO RTE empty and ALT/CO RTE with NONE because we will currently not use this function e. g. to use a predefined flight plan from Frankfurt to Vienna or a predefined plan to an alternative airport for Vienna. For more details please see the MCDU guide.
50. **FLT NBR:** Please enter the flight number using the MCDU keyboard – in our case LH320 – into the scratchpad and then use LSK 3L to cut and paste the data into the field FLT NBR.
51. **COST INDEX:** The Cost Index determines the speed used for climb, cruise and descent if managed speed is used. Please enter using the MCDU keyboard a value of 40 and then use LSK 5L to cut and past the value into the field COST INDEX. The cost index for fuel and maintenance of 40 is a medium time cost and high fuel cost value (please see table below).

Table 2. A319/A321 cost index

(kg/min)

TIME COST (US$/min) / FUEL COST (US$/USG)	LOW < 10	MEDIUM 10 < to < 15	HIGH > 15
LOW < 0.7	40	60	80
MEDIUM 0.7 < < 0.9	30	45	60
HIGH > 0.9	25	40	50

Picture 40: Table Cost Index

52. **CRZ FL:** In our case it is 31.000 feet (so enter 310) and the outside temperature for this flight level then automatically will be calculated = -47 degrees.

53. **F-PLAN:** We will use the flight plan as explained in chapter 3.9. Please use the F-PLAN button of the left MCDU to change to the F-PLAN page.
- Push LSK1L (next to EDDF)
- Push LSK1L (next to DEPARTURE)
- Select takeoff runway: In our case we will use 07C (changed from previously 07L)
- Select SID = SULU8D by browsing (use the button with arrow showing up) and then push the respective LSK L)
- Insert SID into temporary flightplan = LSK6R
- Browse (using the button with arrow showing up) to SULUS and push the respective LSK L next to SULUS
- Select AIRWAYS = LSK5R
- Enter UZ650 into the scratchpad and push LSK1L
- Enter VEMUT into the scratchpad and push LSK1R
- Enter UZ37 into the scratchpad and push LSK2L
- Enter BUDEX into the scratchpad and push LSK2R
- Enter UZ205 into the scratchpad and push LSK3L
- Enter VENEN into the scratchpad and push LSK3R
- Insert flightplan into temporary flightplan = LSK6R
- Browse (using the button with the arrow showing up) until you see LOWW
- Select LOWW = Push LSK6L
- Select ARRIVAL = Push LSK1R
- Select landing runway: In our case we will use ILS16. Browse (using the button with arrow showing up) to ILS16
- Select STAR = VENE2W by browsing (use the button with arrow showing up) and push the respective LSK L)
- Select VIA = NER5L
- Enter STAR into temporary flightplan = LSK6L
- Enter Temporary Flightplan = LSK6R
- Browse (use the button with arrow showing up) and look lines showing F-PLAN-DISCONTINUITY
- If there are one, push the button CLR on the scratchpad and then the LSK L beside F-PLAN-DISCONTUNUITY

The complete flightplan then should look approximately as follows (speed and flight level are the actual flight values):

NO.	ID	NAME	VIA	DIST. (NM) to next WP	Actual SPEED	Actual ALT. (FT)	CSTR
1	EDDF07C	FRANKFURT		1	150	364	
2	800		C067	6	116	800	/+800
3	DF149	DF149	SULU8D	5	220	4.300	=220/
4	DF151	DF151	SULU8D	5	250	7.200	=250/
5	(LIM)		SULU8D	12	250	10.000	=250/
6	DF169	DF169	SULU8D	17	270	15.700	
7	AGOLO	AGOLO	SULU8D	13	270	21.500	
8	OKTUM	OKTUM	SULU8D	12	270	24.500	
9	KOMIB	KOMIB	SULU8D	19	270	27.200	
10	SULUS	SULUS	SULU8D	20	315	28.000	
11	TONSU	TONSU	UZ650	7	300	31.000	

12	T/C		UZ650	0	300	31.000	
13	ERETO	ERETO	UZ650	11	300	31.000	
14	NOGRA	NOGRA	UZ650	4	300	31.000	
15	NIKUS	NIKUS	UZ650	10	300	31.000	
16	TIPAM	TIPAM	UZ650	8	300	31.000	
17	VEMUT	VEMUT	UZ37	17	300	31.000	
18	ETVIS	ETVIS	UZ37	55	300	31.000	
19	VADOV	VADOV	UZ37	18	300	31.000	
20	BUDEX	BUDEX	UZ205	15	300	31.000	
21	(T/D)		UZ205	9	300	31.000	
22	VENEN	VENEN	VENE2W	9	300	27.800	
23	WW190	WW190	VENE2W	9	300	24.900	
24	WW191	WW191	VENE2W	9	300	21.700	
25	WW192	WW192	VENE2W	9	300	18.500	
26	MASUR	MASUR	VENE2W	9	**270**	16.800	**=270/-17.000**
27	TEMTA	TEMTA	VENE2W	17	270	14.200	
28	NERDU	NERDU	VENE2W	11	250	10.000	**/+6.000**
29	WW871	WW871	NER5L	6	250	7.200	**/+6.000**
30	WW896	WW896	NER5L	10	250	6.000	**/+6.000**
31	WW675	WW675	NER5L	5	250	6.000	**/+6.000**
32	WW673	WW673	NER5L	5	212	5.700	**/+5.000**
33	WW672	WW672	NER5L	4	175	5.000	**/+5.000**
34	WW671	WW671	NER5L	2	175	5.000	**/+5.000**
35	WW670	WW670	NER5L	1	175	5.000	**/+5.000**
36	13OEZ	13OEZ	C160	13	175	4.851	**/+4.851**
37	LOWW16	SCHWECHAT	C160		137	597	
		Total :		**392 NM**			

Picture 41: Detailed Flight Plan EDDF – LOWW

The waypoints from 37 are automatically inserted because in case of "landing abort" those are the next waypoints you should head to and to await new instructions by the ATC.

The flight plan itself i.e. departure airport EDDF, complete route and arrival airport LOWW (but except departure runway, SID, STAR/TRANS and arrival runway) is already previously saved as a company route. You can load it using the MCDU and the INIT A page entering into the scratchpad EDDFLOWW01 and then using LSK1L. Please note that the loading will take some time because the whole navigation DB has to be searched for the respective data. If you use this option then after loading just add departure runway, SID, arrival runway and STAR/TRANS.

54. **RAD NAV:** Please enter FFM into the scratchpad and then press LSK1R. Entering FFM results in duplicate entries. So please select the "nearest" one = LSK 1L.

XX. **INIT PAGE B or 2:** Please press INIT and then use the button with the arrow showing right to change to the INIT page 2 (INIT page 2 or B only can be opened if the engines are not running)

55. **BLOCK:** Please enter 8.7 in scratchpad and then press LSK 2L

56. **ZFWCG/ZFW:** ZFWCG is automatically calculated and displayed. ZFW will also be automatically calculated after entering the "BLOCK" fuel value – please see previous item -.
If you want to change the first value ZFWCG all you have to do is enter the new value and press the appropriate line select key, to overwrite the leftmost value. But to change the second value ZFW you need to include the slash before it. So in the case of the ZFW you need to enter p. e. "/55.6".

XX. **PERF PAGE:** Please change to the Performance Page by pressing the respective button on the MCDU.

57. **FLAPS/THS** = Trimmable Horizontal Stabilizer: Please see below a short graphic showing the relation between ZFWCG and THS.

Picture 42: Table Flaps / THS

The standard value for the ZFWCG is 25.0. So the related THS setting (according to the table above) is 0.8 and already entered by the system. If you do not want to use this value then enter into the scratchpad (using the MCDU keyboard) the new value. In our case just enter **1/** and then press LSK 3R

so that the value is cut and pasted into the field FLAPS/THS.

58. **FLEX TO:** The value is automatically calculated and displayed. If you want to change the value, just overwrite the content of this field.

XX. **ENG OUT ACC:** We leave the engine out / acceleration altitude as proposed by the MCDU (Ground level plus 1500 Feet).

59. **V1, V2 and VR:** The values are automatically calculated and displayed. If you want to change those values, just overwrite the content of the fields. Please note that those various speeds are only calculated after FLAPS are entered (#57)

XX. **TRANS ALT:** The transition altitude for Germany and for Vienna is 5.000 so we leave the value as it is.

XX. **THR RED / ACC:** We leave the thrust reduction / acceleration altitude as proposed by the MCDU (Ground level plus 1500 Feet).

XX. **Performance Pages:** Please also check the other PERF pages (CLB, CRZ, DES and APPR) by using LSK6R or LSK6L. Make sure all parameters are OK. Especially the Cost Index should be checked, which determines the speed used for climb, cruise and descent if managed speed is used

5.5   Cockpit Preparation – Part 2

COCKPIT PREPARATION – Part 2					
NO.	**PANEL**			**ACTION**		**REMARK**

NO.	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)	REMARK
64	EFIS	FD / ILS	3	Button: LS	OFF	
65	EFIS	ND MOD/RGE	5 & 6	ND mode and range	SET	Mode: ARC / Range 10
66	EFIS	ADF/VOR	7	VOR / ADF select	AS REQUIRED	
67	FCU	ALTITUDE	3	First Altitude	SET TO 12.000 Feet	>than THR RED altitude
68	FCU	FCU	1 to 4	DASH-BALL-DASH-BALL-ALT-BALL-DASH	CHECK	
69	ECAM	ECAM	1	STATUS	CHECK	
70	PEDESTAL	RADIO	1	ATC - FREQUNCY	SET	If ATC is used
71	PEDESTAL	RADIO	1	ATC CLEARANCE	OBTAIN	If ATC is used
72	GLARESHIELD	ND-DISPL.	2	IRS ALIGN	CHECK	
73	MCDU	F-PLAN		F-PLAN PAGE	SET	

65. **ND mode and range:** Set ND mode during takeoff to ARC and range to 10.

67. **First Altitude:** On the FCU (Flight Control Unit) – Altitude – using the respective knob please set the 1st to be reached altitude at 12.000 Feet. This value has to be in any case higher than the Thrust Acceleration Altitude (in our example 1864 Feet). If this is the case then a ball appears to the right of the altitude entered which means that the aircraft will fly in "managed mode" until this altitude is reached. **Please confirm the entry by pushing the knob.** Then it is "confirmed" and can be seen as a "blue" value on top of the "Altitude Indicator" on the PFD.

AES: Open the AES window (CTRL+SHIFT+W) and select the option "F6 – Prepare for Departure" and then select the option "F1 – Yes, I need Pushback please, prepare now, wait for start request"

5.6   Before Pushback and Start

BEFORE PUSHBACK OR START						
NO.	**PANEL**			**ACTION**		**REMARK**

NO.	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		REMARK
74	MCDUw	MAIN MENU	ACFT DOORS	CLOSE ALL DOORS	PUSH		Start Checklist / Co-Pilot - if selected
75	MCDU R	MAIN MENU	ACFT DOORS	ALL WINDOWS AND DOORS CLOSED	CHECK	CoP	
76	OVERHEAD	APU	10	APU MASTER and START	ON	CoP	START= available 10 sec after MASTER
77	OVERHEAD	APU	10	APU BLEED = ON	ON	CoP	
78	MCDU	ELEC	6	EXT PWR	OFF	CoP	
79	OVERHEAD	SIGNS	12	CABIN SIGNS (SEAT BELT SINGS = ON)	ON	CoP	
80	PEDESTAL	THR LEVER	4	LEVERS	CHECK IDLE		
81	PEDESTAL	P. BRAKE	7	PARKING BRAKE	SET to ON	CoP	FSX: CTRL + . (period)
82	MCDU2	MAIN MENU	GND SERV.	TRAFFIC CONES	REMOVE	CoP	
83	MCDU2	MAIN MENU	GND SERV.	WHEEL CHOCKS	REMOVE	CoP	
84	EFIS	AP SETTING	2	BARO REF	SET / X CHECK (Read out)	CoP	
85	OVERHEAD	EXT. LIGHTS	9	BEACON	ON	CoP	Checklist complete

81. **PARKING BRAKE:** The parking brakes were OFF when the "COLD DARK" aircraft state was loaded. Now they are set to ON.
82. **TRAFFIC CONES:** Are automatically removed.
83. **WHEEL CHOCKS:** Are automatically removed.
84. **BARO REF:** As we are flying with "Fair Weather" it means that in Frankfurt there will be no surface winds and for takeoff the runways 7C and 7R are in use. The air pressure currently is 1013 hPa and we have a temperature of 5 degrees C. As this is the "standard value" nothing has to done. If the air pressure is different the Copilot will automatically set the right value.

5.7 Engine Start

AES: Open the AES window (CTRL+SHIFT+W) and select the option "F1 – Start Pushback now". During pushback you can start the engines according to #93 - #97. The settings will be confirmed by the Pilot and the Copilot. When pushback has been finished set parking brake to ON and proceed with chapter 5.9 .

Engines can either be started during or after pushback (if necessary). Therefore also 2 different checklists are available in the MCDU MENU – Checklists. Please select the one you want to use by clicking on the respective LSK.

5.7.1 Engine Start with Pushback

ENGINE START – with pushback						
NO.	**PANEL**			**ACTION**		**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)	
86	MCDU	MAIN MENU	CHECKLIST	SELECT: "START WITH PUSH" = LSK5L		Starts next Checklist / Co-Pilot - if selected
87				„Flight Deck to Ground"		GROUND: „Go ahead"
88				„We have ATC clearance"		GROUND: „Roger"
89				„Confirm ground equipment = clear"		GROUND: "Clear"
90				"Starting pushback"		GROUND: "Roger"
91	PEDESTAL	P. BRAKE	7	PARKING BRAKE = OFF	SET to OFF	FSX: . (period)
92						GROUND: "OK. Starting Pushback"
93	PEDESTAL	ENGINE	5	ENG MODE SEL	IGN START	
94	PEDESTAL	ENGINE	5	MASTER SW 2	ON	
95	MAIN PANEL	E/WD	5a	No. 2 RUNNING UP	CHECK	
96	PEDESTAL	ENGINE	5	MASTER SW 1	ON	Engine 2 N1 > 20%
97	MAIN PANEL	E/WD	5a	No. 1 RUNNING UP	CHECK	
98				When in Position: Stop Pushback	STOP (SHIFT + P)	
99						GROUND: „Pushback complete"
100	PEDESTAL	P. BRAKE	7	PARKING BRAKE	ON	FSX: CRTL +.(period)
101						GROUND: "Have a good flight" – CL complete

89. **CONES / CHOCKS:** Are automatically removed.
94. **Engine Start:** After setting the Engine Mode Selector to IGN START you can check on the EWD that the FADEC (Full Authority Digital Engine Control) have turned on because the amber information is replaced by active displays.
98. **PUSHBACK:** To stop the pushback use SHIFT +P (has to be used for start and stop the pushback). In case a 90 degrees turn is required use additionally 1 (tail goes to the left) or 2 (tail goes to the right). The turn starts exactly 9 sec. after pressing 1 or 2 (FSX restriction).

5.7.2 Engine Start without Pushback

ENGINE START						
NO.	**PANEL**			**ACTION**		**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)	
102	MCDU	MAIN MENU	CHECKLIST	SELECT: "START" = LSK6L		Starts next Checklist / Co-Pilot - if selected

103				„Flight Deck to Ground"			GROUND: „Go ahead"
104				„We have ATC clearance"			GROUND: „Roger"
105				„Confirm ground equipment = clear"			GROUND: "Clear"
106				„Starting engines"			GROUND: „Roger"
107	PEDESTAL	ENGINE	5	ENG MODE SEL	IGN START		
108	PEDESTAL	ENGINE	5	MASTER SW 2	ON		
109	MAIN PANEL	E/WD	5a	No. 2 RUNNING UP	CHECK		
110	PEDESTAL	ENGINE	5	MASTER SW 1	ON		Engine 2 N1 > 20%
111	MAIN PANEL	E/WD	5a	No. 1 RUNNING UP	CHECK		
112				"Both Engines running"			GROUND: „Roger"
113							GROUND: "Have a good flight" – CL complete

108. **Engine Start:** After setting the Engine Mode Selector to IGN START you can check on the EWD that the FADEC (Full Authority Digital Engine Control) have turned on because the amber information is replaced by active displays.

5.8 After Engine Start

AFTER ENGINE START							
NO.	**PANEL**			**ACTION**			**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
114				ENGINE 1 & 2 are running for 15 sec			Start Checklist / Co-Pilot - if selected
115	PEDESTAL	ENGINE	5	ENG MODE SEL	NORM	CoP	
116	OVERHEAD	APU	10	APU BLEED	OFF	CoP	
117	OVERHEAD	APU	10	APU MASTER SW	OFF	CoP	
118	PEDESTAL	SPEED-BR.	6	GROUND SPOILERS	ARM	CoP	Mouse click: right
119	PEDESTAL	RUDDER	4	RUDDER TRIM	SET to 0 degree	CoP	
120	PEDESTAL	PITCH	4	PITCH TRIM	SET to THS Value		
121				AILERON, ELEVATOR and RUDDER	CHECK ALL 6 POSITIONS		
122	PEDESTAL	FLAPS	8	FLAPS	SET to 1	CoP	FSX: F7
123	OVERHEAD	ANTI-ICE	8	ENG ANTI ICE (1 &2)	ON / OFF		
124	OVERHEAD	ANTI-ICE	8	WING ANTI ICE	ON / OFF		
125	ECAM	ECAM	1	ECAM STATUS	CHECK		
126	ECAM	ECAM	1	ECAM DOOR PAGE	CHECK	CoP	
127				HAND SIGNAL RECEIVED			Checklist complete

118. **GRD SPOILERS:** In order to be able to arm the spoilers without extending them, please move the throttles slightly out of idle. The problem is that FSX uses Boeing style spoilers, which extend when armed and the throttles are in idle position. **Another option is to click on the spoiler arm using the right mouse button.**

120. **PITCH TRIM:** Copilot sets value according to the THS value (MCDU – PERF page)

121. **FLIGHT CONTROLS:** Turn the sidestick to all positions e. g. FULL LEFT, FULL RIGHT, NEUTRAL, FULL UP, FULL DOWN, NEUTRAL, RUDDER FULL LEFT and RUDDER FULL RIGHT. Each required position / check is mentioned in the INFOBAR and the various checks are orally confirmed.

5.9 TAXI

TAXI							
NO.	**PANEL**			**ACTION**			**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
128	PEDESTAL	RADIO	1	TAXI CLEARENCE	OBTAINED		If ATC is used
129	PEDESTAL	P. BRAKE	7	PARKING BRAKE	OFF		FSX: . (period)
130				GS> 10 Knots			Start Checklist / Co-Pilot - if selected
131	OVERHEAD	EXT. LIGHTS	9	NOSE LIGHT	TAXI	CoP	
132	PEDESTAL	P. BRAKE	7	PARKING BRAKE	OFF	Cop	FSX: . (period)
133	PEDESTAL	THR LEVER	4	LEVERS	AS REQUIRED		
134				PRESS BRAKES to listen for PnF CALL	PRESS PEDAL / RELEASE		
135	MAIN PANEL	AUTO BRAKE	6	SET TO	MAX	CoP	
136	MCDU			TAKEOFF DATA	REVIEW	CoP	
137	FCU	HDG / ALT	2 & 3	FCU HDG/ALT = DASH-BALL-DASH-BALL	CHECK		IF ALT NOT SET CoP sets it to 7000ft
138				ALL DISPLAYS ARE ON	CHECK		
139	ECAM	PANEL	5	TO CONFIG	PRESS	CoP	
140	MAIN PANEL	E/WD	5a	TO MEMO	CHECK NO BLUE	CoP	Checklist complete
141	EFIS	FD / ILS	3	FD	CHECK ON		
142	PEDESTAL	TRANSPOND.	9	ATC CODE	CONFIRM / SET		If ATC is used

133. **THRUST LEVERS:** Set Thrust Levers to the manual range. Around 35-40 % N1 (EWD) should be enough

to move the aircraft. Taxiing should be operated at 20 knots, with 10 knots during turns. As soon as the aircraft moves, between 31 and 32 % N1 (EWD) thrust should be enough to keep it going to the holding point of runway 07C. If you are getting too fast just use the brakes to reduce speed.

134. **BRAKES:** Just use the brakes for a moment.

135. **AUTO BRAKE:** To set Auto Brake to MAX it is necessary that Parking Brakes are released (#132). If for any reasons before takeoff the Parking Brake is used again, the Auto Brake automatically will be switched off. In such a case before takeoff it has to be set to MAX again

136. **Takeoff Data:** Check data (– *V1 – VR – V2 – Flaps – Flex Temperature – Destination Fuel on Board –*) which are available on the PERF TAKEOFF as well FUEL PRED page.

139. **ECAM PANEL – TO CONFIG:** Just push the button on the ECAM panel.

5.10 Before Takeoff

BEFORE TAKEOFF							
NO.	**PANEL**			**ACTION**			**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
143				INFORMATION TO CABIN CREW			"Please prepare for Takeoff"
144	OVERHEAD	EXT. LIGHTS	9	TAXI TO RUNWAY HOLDING POINT			**Start Checklist / Co-Pilot please see below**
145	ECAM	WHEEL PAGE	1	BRAKE TEMP = below 150	CHECK	Cop	CoP set Brake Fans On if Brake Temp > 150
146	MAIN PANEL	BRAKE FAN	11	BRAKE FANS	OFF	Cop	
147	PEDESTAL	ENGINE	5	ENG MODE SEL = NORMAL	CHECK		
148	PEDESTAL	TCAS	10	TCAS TA or TA/RA plus TILT ABOVE	SET	CoP	
149	OVERHEAD	EXT. LIGHTS	9	EXT. LIGHTS	SET	CoP	Strobes, Land. and Nose Lights
150				PF SLIDING TABLE	STOWED	Cop	**Checklist complete**
151	MAIN PANEL	N/SKID NW	10	A/SKID & NW STRG	CHECK = ON		
152	PEDESTAL	RADIO	1	TAKEOFF / LINE UP CLEAR	OBTAIN		If ATC is used
153	PEDESTAL	RADIO	1	ATC (if no AUTO position)	ON		If ATC is used

144. **Start Before Takeoff CL:** There are 3 ways to start the CL:
  - If you are flying with a fully programmed MCDU (like in pour case) the CL automatically will start if you are near the runway holding point. The distance is displayed in the Infobar.
  - You can start the CL manually using the MCDU 2 CHECKLIST menu option
  - Just use "1" on the keyboard

148. **TCAS**: Use the outer ring of the knob to set the mode to TA ONLY.

152. **Approach Path Clear:** Look left and right and assure that the runway is clear. Then enter the runway 07C for takeoff.

5.11 Takeoff (Part 1)

TAKEOFF – Part 1						
NO	**PANEL**			**ACTION**		**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)	
154	GLARESHIELD	CHRONO	7	CHRONO	**START**	Push upper right button
155	PEDESTAL	THR LEVER	4	SET LEVERS TO	**FLEX**	

155. **Takeoff:**

Picture 43: ND - On the runway – ready for TAKEOFF

At this time the IRS are now automatically aligned with the GPS position and the aircraft should be displayed on the ND at the beginning of runway 07C (please see picture above).

If cleared for takeoff push the thrust levers to 60 – 70 % N1 (EWD) and monitor the EWD to make sure thrust is available. If everything is OK, you can push the thrust levers to the FLEX detent (you will hear two clicks) and it will be confirmed on the FMA. You can also use the TOGA detent (if the runway is short or wet). But for this flight we decide to save some fuel and use FLEX thrust takeoff instead.
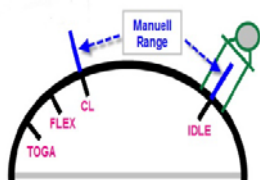
Picture 44: Thrust Lever Positions

5.12 Takeoff Abort

ABORT TAKEOFF						
PANEL			**ACTION**			**REMARK**
TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
PEDESTAL	THR LEVER	6	THRUST LEVERS	IDLE		FSX: F1
PEDESTAL	THR LEVER	6	REV	MAX		FSX: F2 (hold some time)
PEDESTAL	THR LEVER	6	REV	OFF		At 70 knots = FSX: 1
MAIN PANEL	BRAKES	6	AUTOBRAKES	OFF		At 35 knots
PEDESTAL	FLAPS	10	FLAPS	UP		<12 knots
PEDESTAL	SPEED-BR.	8	GRD SPOILERS	DISARM		<12 knots
OVERHEAD	EXT. LIGHTS	9	STROBES	OFF		<12 knots
OVERHEAD	EXT. LIGHTS	9	LANDING LIGHTS	OFF		<12 knots
PEDESTAL	TCAS	10	TCAS	STANBY		<12 knots
PEDESTAL	FLAPS	10	FLAPS	TO POSITION		
PEDESTAL	SPEED-BR.	8	GRD SPOILERS	ARM		
Please follow procedure again from # 128						

If it is necessary to abort takeoff please just draw the thrust levers back to IDLE and set the reversers to MAX (by using F2 from the keyboard). Currently there is no special CL after "Takeoff Abort". In such cases please load the TAXI STATE and start from there (chapter 4.3 of this manual).

5.13 Takeoff (Part 2)

TAKEOFF – Part 2							
NO.	**PANEL**			**ACTION**			**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
156				Takeoff thrust is set			Start Checklist / Co-Pilot - if selected
157				"Takeoff"			
158				"FMA"	"FMA checked, Power set"		
159					"100 Knots"		At 100
160				"Checked"			
161					"V1"		At GS = V1
162					"Rotate"		At GS = VR
163					"Positive climb"		Radio Alt >50 ft, VS > 100 ft/min
164	MAIN PANEL	GEAR	7	"Gear up"	GEAR UP	CoP	FSX: G
165	PEDESTAL	SPEED-BR.	6	GROUND SPOILERS	DISARM	CoP	FSX: /
166	MAIN PANEL	GEAR	7	GEAR STOWED	"Gear is up , lights off"		Radio Alt >50 ft, VS > 100 ft/min
167				At Thrust Red. / Acceleration Alt.			
168	PEDESTAL	THR LEVER	4	SET LEVERS TO	"CLIMB THRUST"		Blinking announcement in FMA
169	FCU	AP	5	AUTOPILOT	"AUTOPILOT ON"		
170				At "Green Dot Speed" / "S-Speed"			
171	PEDESTAL	FLAPS	8	"Flaps up"	SELECT	CoP	FSX: F6
172					"Flaps up"		Checklist complete
173	FCU	ALTITUDE	3	Cruize Altitude	SET TO 31.000 feet		

162. **Rotate:**
   a. During the takeoff roll, the stick should be pressed half way forward until the speed reaches 80 knots. The stick position can be monitored on the PFD (please see picture 45).
   b. As soon as the runway has been entered and if it has an ILS, the yaw bar appears on the PFD to help guiding the aircraft along the runway centerline (please see picture 45).

Sidestick-Position

Yaw Bar – Runway Position
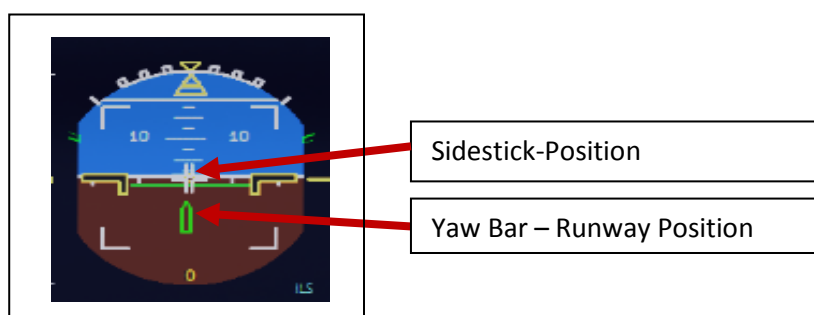
Picture 45: Joystick: On the runway

   c. When the speed is over 80 knots, the stick can be released to come back to a neutral position.
   d. When VR = 149 knots is reached (indicated with a magenta triangle on the PFD speed tape), the Copilot will announce "ROTATE" – then pull the stick for the rotation. If the FD is not perfectly stable at this time, take a 15° pitch angle.
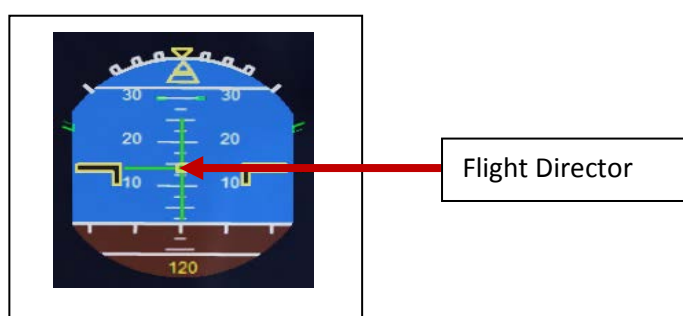
Flight Director

Picture 46: Flight Director: During takeoff

   e. Shortly after takeoff the joystick position indicator and the runway yaw bar on the Attitude Indicator will disappear and Flight Director Indicator will show up (please see picture above).
xxx. **A.FLOOR:** If you are flying with a too high pitch automatically the Alpha Floor mode (Display = A.FLOOR in PFD / FMA section) will be switched on i.e. full thrust automatically will be set - not considering the position of the thrust levers. As soon as the pitch is back to normal the thrust levers will be automatically set back to TOGA LK (displayed on the FMA). This is a "locked" = fixed mode and can only be switched off using the following procedure:
   a. Set the thrust levers into the TOGA position
   b. Switch off auto thrust using the FCU button
   c. Now bring back the thrust lever to the CL position
   d. Activate auto thrust again using the FCU button
   e. If already activated the Autopilot has to be switched to ON again
166. **Landing Gear – Autobrake**: The autobrake will automatically turn off 10 seconds after the Landing Gear is retracted
167. **Thrust Reduction Altitude**: When the THR RED altitude is reached (1.864 feet in our example) a
168. flashing LVR CLB message appears on the FMA (1st column). Move the thrust levers back to the CL detent. As the thrust reduces when the levers are moved back to the CL detent, you should anticipate

the pitch reduction caused by this thrust reduction.

Acceleration Altitude (normally = Thrust Reduction Altitude): At this altitude the CLB modus becomes active on the FMA (2nd column). The aircraft will now accelerate to the target speed of 250 knots (below 10.000 feet) if there are no speed restrictions. On our flight there is one for DF149 = 220 i.e. only after passing this waypoint the plane will accelerate to 250 knots.

171. **FLAPS UP:** If Flaps 2 are used for takeoff then at F-speed flaps will be set to "1".

173. **CLIMB / Altitude: Before** the first set altitude of 12.000 feet will be reached (see No. 67) please enter the chosen cruise altitude from the MCDU = 31.000 feet into the FCU. If they plane already leveled off at 12.000 feet (no point after 12.000 on the ALT display) then press the ALT button again i.e. managed mode is selected.

5.14 After Takeoff

AFTER TAKEOFF

NO.	PANEL			ACTION			REMARK
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
174	EFIS	INFOR.	4	EFIS OPTION	ARPT		
175	PEDESTAL	RADIO	1	RADIO NAV	CHECK		
176	PEDESTAL	ECAM	1	ECAM MENU	REVIEW		
177	MCDU	PROG		OPT / MAX ALTITUDE	CHECK		
178				FLAPS UP and RETRACTED			Start Checklist / Co-Pilot - if selected
179	PEDESTAL	ENGINE	5	ENG MODE SEL = NORMAL	CHECK	Cop	
180	PEDESTAL	SPEED-BR.	6	GROUND SPOILERS	DISARMED	CoP	FSX: /
181	PEDESTAL	FLAPS	8	FLAPS UP and RETRACTED	CHECK	CoP	FSX: F6
182	ECAM	GEAR	2	GEAR IS UP and STOWED	„Gear is up, Lights off"	CoP	
183	OVERHEAD	EXT. LIGHTS	9	LIGHTS OFF	OFF	CoP	
184	OVERHEAD	AIR COND	7	1st and 2ND PACK are ON	CHECK	Cop	
185	OVERHEAD	ANTI-ICE	8	ANTI ICE (1 &2)	AS REQUIRED		=OFF
186	PEDESTAL	TCAS	10	MODE: ABOVE TILT	CHECK		
187	EFIS	A PRESSURE	2	BARO REF	X-CHECK (Read out)		Checklist complete

187. **BARO REF:** As we are flying with "Fair Weather" it means that in Frankfurt there will be no surface winds and for takeoff the runways 7C and 7R are in use. The air pressure currently is 1013 hPa and we have a temperature of 5 degrees C. As this is the "standard value" nothing has to done. If the air pressure is different the Copilot will automatically set the right value.

We are flying the SID according to the following chart:
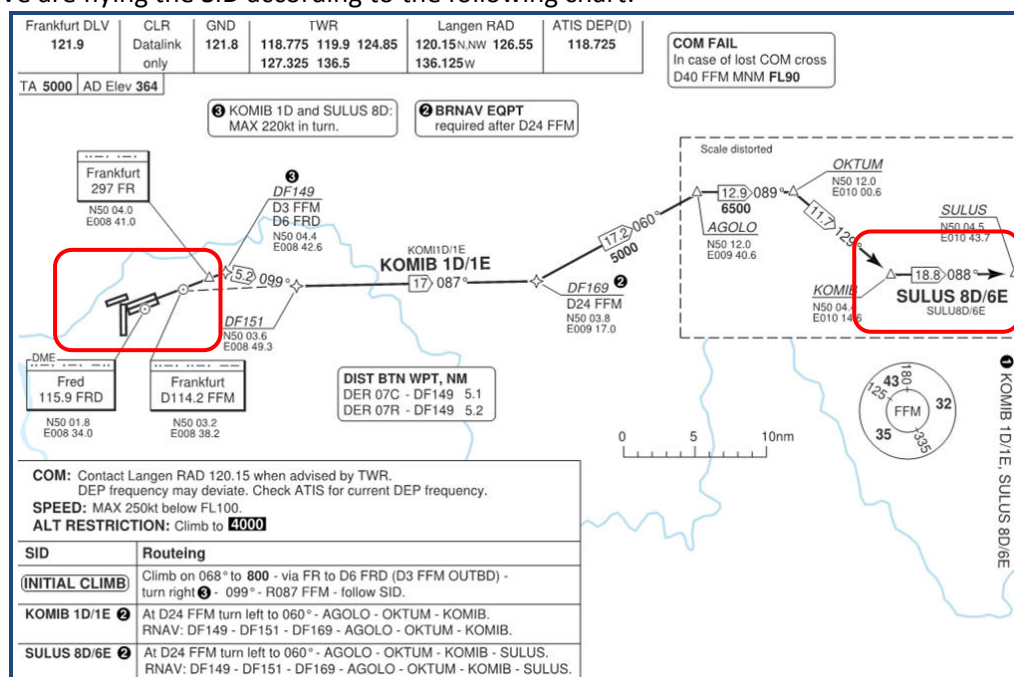
Picture 47: EDDF - Runway 07C – SID SULU8D

5.15 Climb

CLIMB						
NO.	**PANEL**			**ACTION**		**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)	
188				**At Transition Altitude**		**Start Checklist / Co-Pilot - if selected**
189	EFIS	A PRESSURE	2	BARO REF to STD	SET / X CHECK **CoP**	
190				**At 10.000 feet**		
191					"Passing 10.000"	
192	OVERHEAD	EXT. LIGHTS	9	LANDING, NOSE,WING, TAXI LIGHTS	LIGHTS OFF **CoP**	
193	FCU	ALTITUDE	3	Cruise Altitude	**SET**	=31.000 feet
194				**Alt > 28.000 feet or FAM "ALT / ALT CRZ"**		
195	PEDESTAL	TCAS	10	TCAS TA or TA/RA plus TILT NORMAL	SET **CoP**	
196	OVERHEAD	SIGNS	11	SEAT BELTS	OFF **CoP**	
197				SLIDING TABLE - COPILOT	EXTENDED **CoP**	**Checklist complete**

188. **Start Climb Checklist:** The checklist starts under the following conditions:
- "After TO" CL is no longer active
- Autopilot 1 is ON
- Flaps are retracted
- Altitude < Transition Altitude
- Climb Mode

188. **Transition Altitude:** Setting up the MCDU we did not change the proposed transition altitude (set to 5.000 feet – standard for Germany and Vienna /Austria) i.e. now reaching this value of 5.000 feet the system has to be set to "STD = Standard". When the field starts blinking please pull the "BARO" button.

191. **At 10.000 feet**: As soon as the altitude of 10.000 feet is reached it means that the speed restriction of 250 knots is no longer valid. Therefore the aircraft speeds up to the calculated value of 291 knots (FMGC or MCDU) based on the COST INDEX used for this flight.

10.000 Feet

Picture 48: 10.000 Feet

194. **Cruise Altitude:** As soon as the cruise altitude of 31.000 feet has been reached (shortly after passing the waypoint TONSU and marked on the ND with a blue arrow showing up) the FMA data on the PFD should change to SPEED, ALT CRZ and NAV. The CRIUSE CL will automatically start if the MCDU is fully programmed.

T/C = 31.000 Feet

Picture 49: T/C – Top of Climb = 31.000 Feet

197. **Sliding Table:** The Copilot's sliding table will automatically be extended after reaching the cruise level.

5.16 Cruise

CRUISE					
NO.	**PANEL**			**ACTION**		**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)	
198	PEDESTAL	ECAM	1	ECAM MEMO / SYS PAGES	REVIEW	
199	MCDU	Var.PAGES		FLIGHT PROGRESS	CHECK	
200	MCDU	FUEL PRED		FUEL	MONITOR	
201	MCDU	PROG		NAV ACCURANCY	CHECK	
202	OVERHEAD	AIR COND	7	CABIN TEMP	MONITOR	

5.17 Descent Preparation

DESCENT PREPARATION							
NO.	**PANEL**			**ACTION**			**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
203				9 NM before TOD			Start Checklist / Co-Pilot - if selected
204				SEAT BELTS = ON	SET	Cop	
205	OVERHEAD	ANTI-ICE	8	ANTI ICE = OFF	CHECK		
206	PEDESTAL	RADIO	1	LANDING INFORMATION	RECEIVED		If ATC is used
207	EFIS	A.PRESSURE	2	BARO REF = STANDARD	CHECK	Cop	
208	MCDU	PERF.	APPR	AIR PRESSURE ARRIVAL AIRPORT	"Checked" and readout	Cop	QNH= 1013
209	MCDU	PERF.	APPR	DECISION HEIGHT	"Checked"	Cop	DH = 200
210	MCDU	PERF.	APPR	LDG CONF (Flaps)	"Checked"	CoP	Checklist complete

204. **SEAT BELT SIGN:** It is also OK if the switch is set to AUTO
205. **ANTI ICE:** If ANTI ICE is ON it is also accepted – condition then will be confirmed
207. **BARO REF**: As we are flying higher than the "transition altitude" it should already be set to "Standard" i.e. nothing has to be done.
XXX. **MCDU – PERF – APPR page:**

Picture 50: MCDU – PERF – APPR page

208. **QNH:** The QNH value of the arrival airport will automatically set by the copilot.
XXX. **OTHER DATA:** Please enter the other missing data like temperature in LOWW, the magnitude and wind for runway 16 in LOWW and the transition altitude for LOWW (please see Picture 50).
XXX. **VAPP:** This is the final landing speed and will automatically be calculated and inserted by the system.
209. **DECISION HEIGHT:** A standard of 200 will automatically be entered by the Copilot. This is also the actual value for our arrival airport LOWW (Vienna) Runway 16 and ILS approach.
210. **LANDING CONFIGURATION:** If a value is not manually entered automatically the value will be set to FULL by the Co-Pilot.

Picture 51: Chart STAR „VENEN 2W"

5.18 Descent

DESCENT

NO.	PANEL			ACTION			REMARK
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
211	FCU	ALT	3	DESCENT = INSERT NEW HEIGHT	INITIATE = PUSH KNOB		= 5.000
212	MCDU	Var.PAGES		DESCENT DATA	INSERT		
213	MAIN PANEL	PFD	1	DESCENT	MONITOR		
214	PEDESTAL	SP BRAKES	6	SET	AS REQUIRED		
215				Vert. Mode = DES / Desc.Prep.CL = compl.			Starts next Checklist / Co-Pilot - if selected
216	MAIN PANEL	PFD	1	FMA	CHECK		
217	PEDESTAL	TCAS	10	TCAS TA or TA RA plus TILT BELOW	SET	CoP	
218				At 10.000 feet:			
219	OVERHEAD	EXT. LIGHTS	9	LAND LIGHTS	ON	CoP	
220	EFIS	FD / ILS	3	ILS LOCALIZER (LS)	PUSH	CoP	EFIS
221				At Transition Altitude			= 5000
222	EFIS	A PRESSURE	2	BARO REF to actual pressure value	SET / X CHECK	CoP	Checklist complete

211. **Initiate Descent:** There are various methods for descent but we will use:
Managed Mode: Before the T/D (Top of Descent) point (between BUDEX and VENEN) is reached (marked on the ND flight path by a white arrow showing down) , the altitude should be set to 5.000 feet. **At T/D please confirm the entry by pushing the knob**. The aircraft will now start to descend automatically according to the flight path calculated in the MCDU – F-PLN.

T/D = 31.000 Feet

Picture 52: Top of Descent – Initiate descent

218. **At 10.000 feet**: As soon as the altitude of 10.000 feet is reached the speed restriction of 250 knots becomes valid. Therefore the aircraft automatically reduces the target speed to 250 knots already at 11.000 feet app. 10 NM before NERDU.

Deceleration Point

Picture 53: ND: Deceleration Point

220. **LS Pushbutton:** If the button is used (normally when passing 10.000 feet) the "Lateral and Vertical Glidescope" shows up on the PFD. The ND display shows now ILS APP on top.

222. **Transition Altitude:** Setting up the MCDU PERF APPR page we set it to 5.000 feet for Vienna i.e. now reaching this value of 5.000 feet again the system has to be set to the actual pressure. Please press the "BARO" button at the altitude of 5.000 feet. The right actual value for Vienna will be automatically set by the Copilot.

OPTIONAL: As we left Frankfurt a little bit late (behind schedule) and want to save some fuel we asked ATC for a "shortcut" e. g. to fly directly from NERDU to WW673. We got the permission so we will fly a direct course. Push the DIR button on the MCDU and select WW673 (scrolling down the list to WW673). Confirm the selection and the ND will change (please see pictures below).

Picture 54: ND: Before and after selecting WWW673 as DIR

5.19 Approach

NO.	PANEL			ACTION			REMARK
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
223				Alt. < 7.000 ft AGL / Alt < Trans.Alt			Starts next Checklist / Co-Pilot - if selected
224	ECAM	ECAM	1	ECAM STATUS	CHECK		
225				SLIDING TABLE S - STOWED	STOWED	CoP	
226	OVERHEAD	SIGNS	11	CABIN SIGNS = ON	CHECK		
227	MCDU	PROG		NAV ACCURANCY	CHECK		
228	EFIS	A.PRESSURE	2	BARO REF CROSS CHECK	SET and Read out	CoP	Checklist complete
229				Initial approach:			
230	OVERHEAD	SIGNS	11	SEAT BELTS	CHECK ON		AUTO is also OK
231	PEDESTAL	ENGINE	5	ENG MODE	CHECK NORM		
232				Approx. 15 NM from touchdown:			
233	MCDU	PROG		NAV ACCURANCY	MONITOR		
234	MAIN PANEL	PFD	1	POSITIONING	MONITOR		

Picture 55: Chart TRANS NER5L
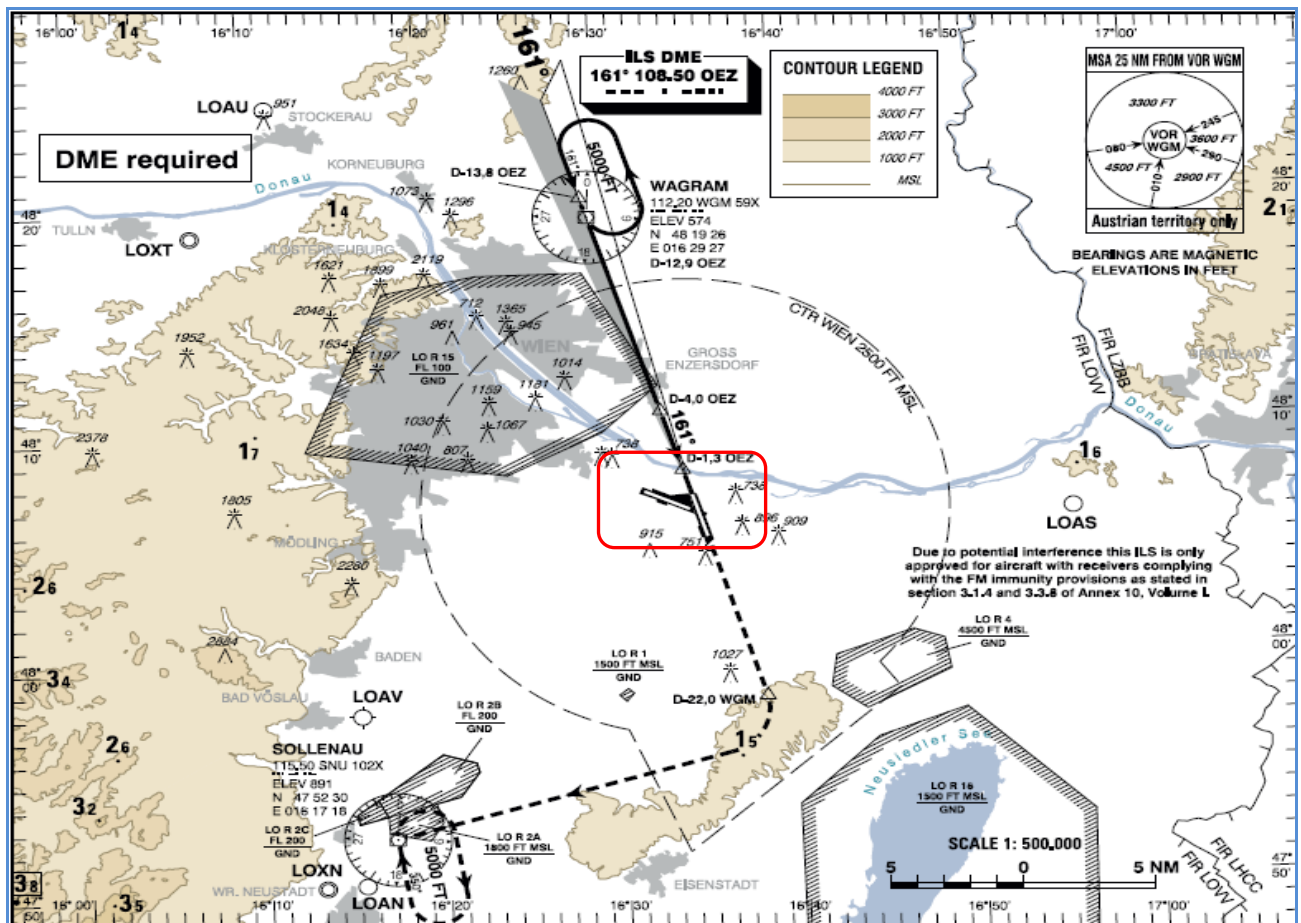
Picture 56: Chart ILS Rwy 16 Vienna
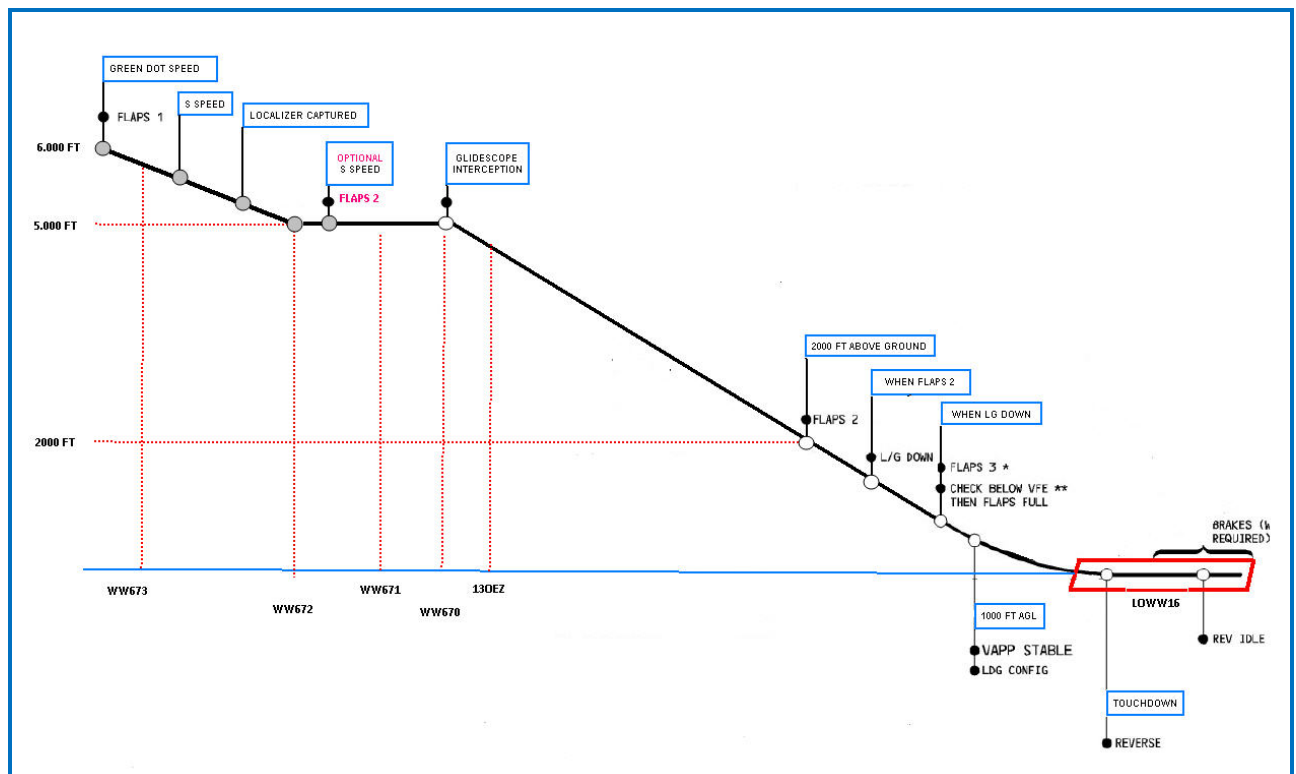
Picture 57: Final Procedure LOWW Rwy16 Vienna

Green Dot-Speed		S - Speed		F - Speed		Vapp - Speed
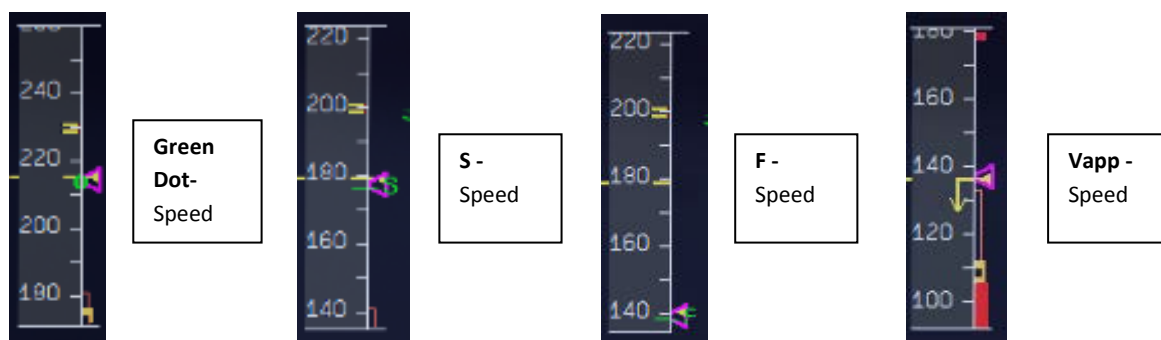
Picture 58: Speeds "Green Dot", S, F and Vapp on PFD

5.20 Final

FINAL							
NO.	**PANEL**			**ACTION**			**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
235	MCDU	PERF		APPR PHASE	SELECT	CoP	Starts next Checklist / Co-Pilot - if selected
236	FCU	LOC	6	LOC	PRESS		
237				Green Dot Speed			
238	PEDESTAL	FLAPS	8	FLAPS 1	SELECT	CoP	FSX: F7
239				S-Speed			
240	PEDESTAL	FLAPS	8	FLAP 2	SET		FSX: F7 OPTIONAL
240				Localizer captured			
241	MAIN PANEL	PFD	1	LOCALIZER CAPTURED	CHECK		
242				Gkidescope becomes active			
243	FCU	APPR	9	APPR	PRESS		
244	FCU	AP	5	BOTH AP	ENGAGE		
245				Glidescope captured			
246	MAIN PANEL	PFD	1	G/S CAPTURE	CHECK		
247				Radio Alt. < 2.000 ft			
248	PEDESTAL	FLAPS	8	FLAPS 2	SELECT	CoP	FSX: F7
249	MAIN PANEL	GEAR	7	L/G DOWN	SELECT	CoP	FSX: G
250				When L/G down, below REF SPEED			
251	PEDESTAL	FLAPS	8	FLAPS 3	SELECT	CoP	FSX: F7
252				Next REF SPEED:			
253	PEDESTAL	FLAPS	8	FLAPS FULL	SELECT	CoP	FSX: F7 / Checklist complete
254	FCU	SPD	1	Set speed to VApp	SET		= 139
255	PEDESTAL	TCAS	10	TCAS	CHECK TA ONLY		
256	MAIN PANEL	PFD	1	FMA	CHECK		
257	MAIN PANEL	PFD	1	LOC CAPTURE	MONITOR		
258	ECAM	ECAM	1	ECAM WHEEL PAGE	CHECK		
259	FCU	ATHR	7	A/THR	CHECK SPD		
260	OVERHEAD	ANTI-ICE	8	WING ANTI ICE	CHECK OFF		

There are two main modes for the approach: Using "Managed Speed" or "Selected Speed (manually)". Our Checklist- and Copilot-Functionality uses the "**Managed Speed**" mode. This means that the speed is automatically set by the MCDU and the flaps are manually deployed by the Copilot (based on the situation).

235. **Initiate Approach Phase:** The FINAL CL automatically will be started if the APPROACH CL has been finished; the flightlevel is below 7.000 feet radar altitude; the ILS-signal has been received and the flight path is less than 90 degrees in relation to the localizer course. Then the APPR mode (MCDU – PERF – APPR) will be activated by the copilot. As soon as the approach phase has been activated – please see picture 54 - the ND display shows now ILS APP on.

236. **LOC (Localizer):** At WW673 we will capture the localizer. After passing WW673 (you are already flying at WW672) press the LOC button on the FCU. The lateral glide path now will be caught. Please check if the lateral glide path has been caught. Please note: If you are pushing the LOC button too early (before turning to WW672) it might happen that the plane captures the localizer in the wrong direction. Please see also chapter 6.4 for details.

Picture 59: LOC initiated near WW673

237. **Green Dot Speed / CLEAN:** After initiating the APPR Phase (#235) automatically the MCDU reduces the speed to "Green Dot Speed" (215 knots).

238. **Flaps:** During the approach the flaps will be slowly step by step extended from 1 (after reaching "Green Dot Speed") to FULL based on aircraft speed.

239. **S Speed:** After the flaps are deployed by the Copilot to 1 automatically the MCDU reduces the speed to S-Speed (177 knots). If the plane does not slow down to S-Speed then just use the speed brakes until S-Speed is reached.

240. **FLAPS 2 (OPTIONAL):** Another method to reduce to S-Speed is to manually deploy the flaps to 2 already just after setting the flaps to 1 but keep in mind the limits. This method is also supported by the Checklist- and Copilot-Functionality.

241. **LOC Capture:** First the lateral glide path will be caught (LOC* or LOC displayed on the PFD -FMA)

Picture 60: LOC captured

242. **Approach:** When the Localizer has been captured (please see picture #60 above) soon after the vertical glide scope becomes active (magenta rhombus fully appears). Then please press the APPR button on the FCU.

243. **Autopilot**: Please also press the 2nd Autopilot button. This means we are making a Category 3 approach (no manual flight path interference of the pilots until after touchdown) and the aircraft is landing fully automatic with both autopilots in use.

245. **G/S Capture:** After also the vertical glide path has been caught the display on the PFD-FMA looks as follows (please see picture 61 below):
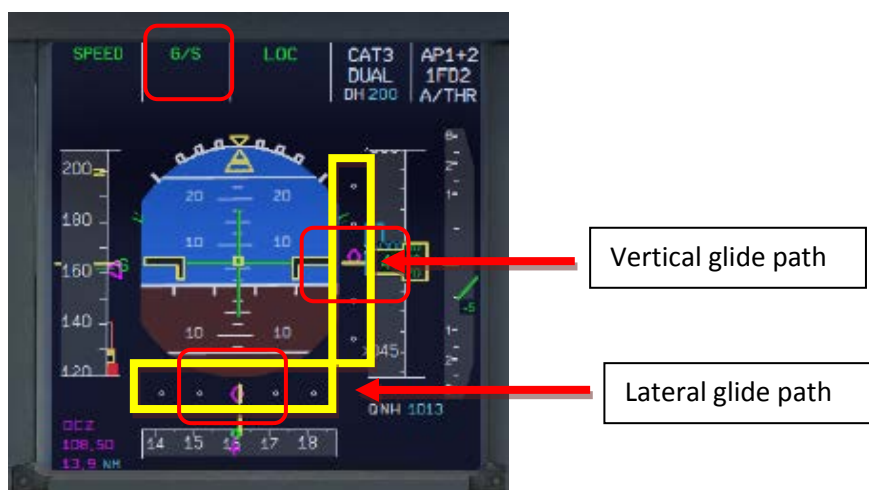
Picture 61: PFD – Glidescope captured - Vertical and lateral glide path

The middle of both fields show the vertical and lateral position of the aircraft where as the magenta rhombus shows the actual position of the glide path. This means that during the approach both rhombuses are moving to the center. The picture above shows a position at which the aircraft is on the nearly ideal position for landing.

On the EFIS control panel please change the knob for the various views to LS. This view also shows the glide path and the position of the aircraft to it.

Picture 62: ND – ILS view LOWW Rwy16

254. **Set VApp:** Vapp (Target Speed) - The speed at which the approach is flown. Vapp, as computed by the FMGC PERF APPR page, is Vls + 5 knots plus 1/3 the headwind component, not to exceed Vls + 20. No additions are made for gusts. After the flaps are set to FULL and the landing gear is down the speed now should be changed to Vapp speed in our example to 137 as calculated by the FMGC – MCDU (PERF APP). As we are flying in "Managed Mode" the speed automatically is reduced to Vapp after the flaps are set to FULL.

259. **Auto Throttle**: Leave the A/THR on…..

260. **Wing Anti Ice**: Leave the Wing Anti Ice OFF

There are also various other approach procedures used depending on airline and weather condition (ILS- and non-ILS-approaches).

5.21 Landing

NO.	PANEL			ACTION			REMARK
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
261				Flaps in Landing Config. (MCDU Settings)			Start next Checklist / Co-Pilot - if selected
262	MAIN PANEL	GEAR	7	LAND. GEAR = FULL EXTRACTED	CHECK	CoP	
263	PEDESTAL	SP. BRAKEs	6	GROUND SPOILERS = ARMED	ARM	CoP	FSX: Right mouse click
264	MAIN PANEL	AUTO BRAKE	6	AUTO BRAKES = MEDIUM	SET	CoP	
265	OVERHEAD	EXT. LIGHTS	9	TAXI LIGHTS / LANDING LIGHTS = ON	ON	CoP	
266	FCU	ALT	3	GO AROUND ALT > 3.000 ft	SET TO 5.000 FEET	CoP	Just enter - do **not** push knob
267	MAIN PANEL	EWD	5	LANDING MEMO	CHECK NO BLUE		
268				At 20 feet:			
269				FLARE	PERFORM		
270	MAIN PANEL	PDF	1	ALTITUDE	MONITOR		
271	PEDESTAL	THR LEVER	4	THRUST LEVERS	IDLE		FSX: F1
272				At touchdown:			
273	PEDESTAL	THR LEVER	4	REV	MAX		FSX: F2
274				BRAKES	AS REQUIRED		
275				At 70 knots:			
276	PEDESTAL	THR LEVER	4	REV	IDLE		FSX: F1
277				At taxi speed:			
278	PEDESTAL	THR LEVER	4	REV	STOW	CoP	
279				Before 30 knots:			
280	MAIN PANEL	AUTO BRAKE	6	AUTOBRK	DISENGAGE	CoP	Checklist complete
281	FCU	AP	5	AP (if applicable)	OFF	CoP	FSX: Z

264. **Auto Brake**: Set to MED (medium)

265. **Exterior Lights**: Just check if all Exterior Lights are on: Strobe, Beacon, Nav & Logo as well as Landing Lights.

266. **Go Around Altitude**: Please change the set altitude in the FCU to the first altitude to be reached after a "Go Around". Please just change the altitude and do **not** press or draw the knob at this point. This is the altitude a plane has to fly to when using the GO AROUND procedure (MCDU FPLAN waypoints in blue) in case a landing has to be aborted. If the copilot functionality is set to ON the value is automatically inserted using the MCDU FPLAN data.

267. **Landing Memo**: In the meantime the Landing Memo should have come up on the EWD. Please check if there are no "blue" entries. If for some reasons there are still "blue" entries (you might have forgotten to make certain settings) then please make those settings now.

269. **LAND and FLARE mode:** As the aircraft gets closer to the ground the LAND mode engages, then the FLARE mode. The actual modes are shown on the FMA.

271. **Thrust Levers: IDLE**: At the altitude of 20 feet you will hear an aural warning: „Retard, Retard". Pull the trust levers back to IDLE and let the aircraft gently touch the ground.

273. **Trust Levers**: **REV:** After touchdown the thrust reversers (by using F2 from the keyboard) should be activated

274. **BRAKES:** The autobrake makes the aircraft decelerate on the ground. You can also take the control at any time by using the brakes. Any manual action on the brakes automatically disconnects the autobrake system.

278. **REV THRUST:** If REV THRUST is used (#273 and #276) the levers are automatically stowed by the Copilot.

281. **AUTOPILOT:** As soon as the runway is left the autopilot automatically is switched off and the warning signal goes on. It will automatically be switched off by the Copilot.

5.22 Go Around

PANEL			ACTION			REMARK
TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
PEDESTAL	THR LEVER	4	THRUST LEVERS	TOGA		
			ROTATION	PERFORM		
PEDESTAL	FLAPS	8	FLAPS	RETRACT ONE STEP		FSX: F6
MAIN PANEL	GEAR	7	L/G	UP		FSX: G
FCU	HEAD	2	HDG	SELECT		

PEDESTAL	THR LEVER	4	THRUST LEVERS	CL		
			At GA ACCEL Altitude:			
PEDESTAL	FLAPS	8	FLAPS	RETRACT ON SCHEDULE		FSX: F6
MAIN PANEL	PFD	1	SPEED	MONITOR		
			Please follow procedure again from # 223			

Thrust Levers: TOGA: If there is an emergency situation and "Go-around" should be performed e.g. the runway is blocked by another aircraft or there is a problem with the aircraft itself just set the thrust levers to TOGA and fly using the a. m. the procedure- and check list.

5.23 After Landing

NO.	PANEL			ACTION			REMARK
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
282				Leaving - Distance to the Localizer			Start Checklist / Co-Pilot - if selected
283	OVERHEAD	EXT. LIGHTS	9	LANDING LIGHTS	OFF	CoP	
284	OVERHEAD	EXT. LIGHTS	9	STROBE LIGHT	OFF	CoP	
285	OVERHEAD	EXT. LIGHTS	9	TAXI LIGHTS	TAXI	CoP	
286	EFIS	FD / ILS	3	ILS LOCALIZER (LS)	OFF	CoP	EFIS
287	FCU	EXPEDITE	8	EXPED	OFF	CoP	FCU – If used for descent
288	PEDESTAL	SP.BRAKES	6	GRND SPLRS	DISARM	CoP	FSX: /
289	PEDESTAL	ENGINE	5	ENG MODE SEL	NORM	Cop	
290	PEDESTAL	FLAPS	8	FLAPS	RETRACT	CoP	FSX: F6
291	PEDESTAL	TCAS	10	TCAS MODE SEL	STBY	CoP	
292	ECAM	WHEEL PAGE	1	BRAKE TEMP all wheels = < 150 degrees	CHECK		
293	OVERHEAD	APU	10	APU MASTER	ON		

285. **Exterior Lights**: Set "NOSE" light to „Taxi".
287. **EXPED:** Only if used for descent.
293. **APU START:** Becomes available 10 seconds after starting APU MASTER

AES: Open the AES window (CTRL+SHIFT+W) and select the option "F2 – Increment Position" until you see the gate position: F17 and then select "F3 – Request Follow-Me to selected Position". Follow the car. When you are at the gate you will hear "Blocks in position" i.e. you have reached the right position.

5.24 Parking

NO.	PANEL			ACTION			REMARK
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
294	PEDESTAL	RADIO	1	ATC (if no AUTO position)	STBY / OFF		
295	OVERHEAD	ANTI-ICE	8	ANTI ICE (WING and ENGINES 1&2)	CHECK = OFF		
296	GLARESHIELD	CHRONO	7	CHRONO	STOP		Push upper right button
297	PEDESTAL	RADIO	1	GROUND CONTACT	ESTABLISH		If ATC is used
298	PEDESTAL	P.BRAKE	7	PARKING BRAKE ON	SET ON		FSX: CTRL + . (period)
299	PEDESTAL	ENGINE	5	ENG MASTER 1 & 2	OFF		Start Checklist / Co-Pilot - if selected
300	MCDU R	GRND SERV		CHOCKS	SET	CoP	
301	PEDESTAL	P.BRAKE	7	PARKING BRAKE	OFF	CoP	FSX: . (period)
302	OVERHEAD	SIGNS	11	SEAT BELTS	OFF	CoP	
303	OVERHEAD	EXT. LIGHTS	9	BEACON LIGHT	OFF	CoP	
304	OVERHEAD	EXT. LIGHTS	9	STROBES, LAND., TAXI and RUNWAY L.	OFF	CoP	
305	OVERHEAD	ANTI-ICE	8	WING & ENGINE ANTI ICE = OFF	CHECK	Cop	
306	OVERHEAD	FUEL	2	FUEL PUMPS	OFF	CoP	OFF should appear / Checklist complete
307	MCDU R	GRND SERV		CONES	SET		
308	MCDU R	GRND SERV		ESTABLISH EXTERNAL POWER	CONNECT		
309	OVERHEAD	EXT POWER	6	EXT. POWER = AVAILABLE	SET TO ON		
310	OVERHEAD	APU	10	APU MASTER	SET TO OFF		
311	MCDU	MENU	ACFT DOORS	DOORS	OPEN (AS REQUIRED)		

301. **CHOCKS / PARKING BRAKE:** Because the brakes have to cool off after landing, the parking brake can be released after the chocks have been set. The plane is then just held by the chocks only.
308. **EXT POWER:** Depending on the situation at the airport direct external power or delivered by a GPU is

used to deliver the power needed. Please select the equivalent. For Vienna we just use EXTERNAL POWER (no GPU).

310. **APU:** After the connection to external power is established the APU can be set to OFF.

AES: Open the AES window (CTRL+SHIFT+W) and select your options.

5 Minutes after the "Parking CL" has been finished the complete system (incl. MCDU) is automatically reset and you are able to prepare for a "turnaround" e. g. starting again with the "Cockpit Preparation CL".

5.25 Securing Aircraft

SECURING AIRCRAFT					
NO.	**PANEL**			**ACTION**		**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)	
312	OVERHEAD	ADIRS		ADIRS (1 + 2 + 3)	OFF	
313	OVERHEAD	EXT. LIGHTS	9	NAV. LIGHTS	OFF	
314	OVERHEAD	SIGNS	11	NO SMOKING & EMERGENCY LIGHT	OFF	
315	MCDU	MENU	ACFT DOORS	DOORS	CLOSE (AS REQUIRED)	
316	OVERHEAD	EXT. PWR	6	EXT PWR	AS REQUIRED	
317	OVERHEAD	ELEC	5	GEN 1 + 2 (Electric Generators)	PRESS	OFF should appear
318	PEDESTAL	INT. LIGHT	3	INTEG LT	OFF	
319	MAIN PANEL	PFD LIGHT	8	SWITCH	OFF	
320	MAIN PANEL	ND LIGHT	8	SWITCH	OFF	
321	ECAM	DIMMER	4	SWITCH UPPER and LOWER	OFF	
322	OVERHEAD	BATTERIES	4	BAT 1 + 2	OFF	

313. **Exterior Lights**: Switch off all exterior lights.

XXX. **Cockpit „Dark & Cold":** Now the status of the cockpit should be "dark & cold". All systems and switches should be "OFF". Before switching the batteries to OFF the panel should look like in the following picture:

Picture 63: Overhead Panel before switching OFF both batteries

6.   Tips and Tricks:

6.1 Adjusting views:

If you want to adjust one of the various available views first open it e. g. it becomes the active window. Then the following key combinations are available:

- CTRL + Return   - Left
- CTRL + Backspace   - Right
- CTRL + SHIFT + Return   - Forward
- CTRL + SHIFT + Backspace   - Backwards
- SHIFT + Return - Higher
- SHIFT + Backspace   - Lower
- SPACE BAR + Mouse wheel   - Zoom in or out
- SPACE BAR + Mouse   - Changing the view angle

6.2   Keeping / saving adjusted views

After you adjusted the views (using the a.m. key combinations) during the whole flight e. g. until you close the FSX respectively change to another aircraft, those adjustments will be kept.

6.3   Working with real Flight Plans:

On the Internet there are several pages where "real" flight plans (like the one we used in this tutorial) are available. Two of the addresses are

- *http://www.vatflight plan.net/web_showfp.php?dep=EDDF&dest=LOWW&start=1 or at*
- *http://rfinder.asalink.net/free/*

On those pages you will find a lot of plans but you should know the airport codes (like in our example EDDF for Frankfurt or LOWW for Vienna). But those codes can be found also using the Microsoft FS Flight Planner. Those plans like in our example can be used for all Aerosoft Airbus X Ext types.

6.4   „Capturing" the ILS-Glide Path:

Sometimes the chosen flight path reaches the last waypoint before capturing the ILS glide path (13OEZ) in a way that the angle would be too big to capture it. The ideal angle should not be greater than 45 degrees and in such cases you then should fly a manually set course (see yellow dotted line) to catch the glide path the right way.

In the following example – Picture 59: Angle „capturing" a glide path - (before we reach WW671) please press LOC so that the lateral glide path will be caught. After catching the lateral glide and the vertical glide path starts moving (please see Picture 55) press APPR (to also catch the vertical glide path) and prepare for a smooth landing.

Picture 64: Angle „capturing" a glide path

6.5 Transfer this document to the iPad

If you do not want to print out this document (and have an iPad in your possession), another way to have it always available during the flight is: Transfer it to your iPad. The easiest way to do this is:

- Download the ACROBAT Reader for the iPad from the Apple Store (it is for free) and install it on your iPad. An ACROBAT icon will be created on your iPad.
- Connect / synchronize your iPad with the PC using iTunes.
- In iTunes select the iPad and change to the APPS page.
- At the bottom of the page you will see the ACROBAT icon and the list of documents which are already available in ACROBAT. Use "ADD" to select this document (saved in your FSX folder under Aerosoft / Airbus X Extended / Documentation) and it will be transferred to your iPad.
- Open ACROBAT and select "Documents". Now this tutorial should be available and can be opened and used on your iPad.

6.6 MCDU (left only) on an external device

You can see and use the left MCDU also on an external device like iPad, iPhone or similar device. Open your browser on the iPad (or any web browser), and type in
http://Your_FS_Machines_IP_Number:9009 . That's all that you need to do.

Your computers local IP adress can be found using "ipconfig" command in command prompt. To open command prompt, please open your Start menu, and write "cmd" into search bar.
Enter "ipconfig" command and confirm by pressing Return key. In the list of adapters, your home network can most likely be found under Local Area Connection, or Wireless Network Connection. Your IP is listed under "IPv4 adress".

6.7 Use of the Procedure and Checklist

After using this tutorial and flying the Aerosoft Airbus X EXT A320 CFM several times you will not need the explanations anymore. Then you can just use the complete procedure and checklist and fly the Airbus as a pilot and nearly as in the real life. Just the procedure- and checklist you will find as Appendix 8.

7. Appendix / Glossary:

Abbreviation	Description
ABV	Above (TCAS)
ADF	Automatic Directon Finder
A/C	Aircraft
AGL	Above Ground Level
A.FLOOR	Alpha Floor
AMP	Audio Management Panel
ANN	Annunciator
A/THR	Autothrust
AC	Air Conditioning
ADIRS	Air Data Inertial Reference System
AIRAC	Aeronautical Information Circular
ALT	Altitude
AP	Autopilot
APPR	Approach (Key on FCU)
APU	Auxiliary Power Unit
ATC	Air Traffic Control
BLOCK	Fuel Weight (kg)
BLW	Below (TCAS)
BRG	Bearing
CFM	Engine Manufacturer GE + SNECMA
CL or CLB	Climb
CLR	CLEAR (Key on MCDU Keyboard)
CO RTE	Company Route
CRZ FL	Cruise Flight Level
DES	Descent
DH	Decision Height
DIR	Direct
DME	Distance Measuring Equipment
ECAM	Electronic Centralized Aircraft Monitoring
EFIS	Electronic Flight Instrument System
EFOB	Estimated Fuel On Board
ELAC	Elevator and Aileron Computer
ENG	Engine
ETD	Estimated Time of Departure
E/WD	Engine/Warning Display
EXPED	Expedite (FCU Key)
EXT PWR	External Power
EXT LT	External Lights
FAC	Flight Augmentation Computer
FADEC	Full Authority Digital Engine Control
FCU	Flight Control Unit
FD	Flight Director
FDR	Flight Data Recorder
FF	Fuel Flow
FL	Flight Level
FLEX	Flexible
FLX/MCT	Flexible/Maximum Continuous Thrust
FMA	Flight Mode Annunciator
FMGC	Flight Management and Guidance Computer
FO	First Officer
FOB	Fuel On Board
FPA	Flight Path Angle
F-PLAN	Flight Plan (MCDU Page)

FQ	Fuel Quantity
GPU	Ground Power Unit
GPWS	Ground Proximity Warning System
GS	Glide Slope
GW	Gross Weight
HDG	Heading
hPa	Air Pressure Unit of Measurement (hector Pascal)
IAE	Int. Aero Engines = Engine Manufacturer RR, P&E, MTU + JAEC
ILS	Instrument Landing System
In Hg	Air Pressure Unit of Measurement (Inch Mercury)
INIT	Initiation (MCDU Page)
KG	Kilogram
IRS	Inertial Reference System
L/G	Landing Gear
LK	Lock
LOC	ILS Localizer
LSK	Line Select Key
MCDU	Multifunction Control and Display Unit
MDA	Minimum Descent Altitude
MKR	Marker
N/W	Nose Wheel
ND	Navigation Display
NDB (ADF)	Nondirectional Beacon (Automatic Direction Finder)
NM	Nautical Miles
PERF	Performance (MCDU Page)
PFD	Primary Flight Display
PPU	Power Push Unit
PROG	Progress (MCDU Page)
QNH	Barometric Pressure Reported By A Station
PSI	Pounds Per Square Inch
PTU	Power Transfer Unit
RAD/NV	Radio/Navigation (MCDU Page)
RAAS	Runway Awareness and Advisory System
RMP	Radio Management Panel
RTO	Rejected Takeoff
RWY	Runway
SD	System Display
SEC	Spoiler and Elevator Computer
SID	Standard Instrument Departure
SRS	Speed Reference System
STAR	Standard Terminal Arrival Route
STDBY	Standby (TCAS)
SW	Switch
TA	Traffic Advisory (TCAS)
TA/RA	Traffic Advisory & Resolution Advisory
TAS	True Airspeed
T/C	Top of Climb
TCAS	Traffic Alert and Collision Avoidance System
T/D	Top of Descent
TERR	Terrain Proximity Alert (GPWS)
THR	Thrust
THR RED	Thrust Reduction
THRT	TCAS Threat
THS	Trimmable Horizontal Stabilizer
TOGA	Takeoff Go-Around
TOW	Takeoff Weight
TRANS	Transition
TRK	Track
UTC	Universal Coordinated Time
V1	Speed at which takeoff cannot be aborted

V2	Minimum Takeoff Safety Speed
V/S	Vertical Speed
Vfe	Maximum Flap Extended Speed
VHF	Very High Frequency
Vls	Minimum Safe Speed
Vmax	Maximum Operating Speed In Current Condition
Vmo/Mmo	Maximum Operating Limit Speed
VOR	Very High Frequency Omnirange Station
Vr	Rotation Speed
XFR	Transfer
ZFW	Zero Fuel Weight
ZFWCG	Zero Fuel Weight Centre of Gravity

8. Checklists and Procedures A 320 CFM

8.1 Basic Preparation Procedure (aircraft in cold & dark state)

BASIC PREPARATION PROCEDURE

NO.	PANEL			ACTION		REMARK
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)	
1	FUEL PLANNER	SIMPLE METH.		PAX-, CARGO- and FUEL LOAD	SET and SEND DATA TO FSX	Please see chapter 4.1 for details
2	MCDU R	MAIN MENU	ACFT STATE	DARK COLD = LSKL1	PUSH	Should already been done
3	OVERHEAD	ELEC	3	BAT 1 + 2 (Batteries)	ON (BOTH)	Should already been done
4	OVERHEAD	ELEC	3	EXT POWER	ON	
5	OVERHEAD	EXT. LIGHTS	9	EXT. LIGHTS (= Nav Lights)	ON	
6	MAIN PANEL	PFD LIGHT	8	SWITCH	ON	
7	MAIN PANEL	ND LIGHT	8	SWITCH	ON	
8	ECAM	ECAM LIGHTS	4	SWITCH UPPER and LOWER	ON	
9	PEDESTAL	INT. LIGHT	3	OVHD INTEG LT	ON	
10	MCDU R	OPTIONS	SOUND	Cabin & Flight Crew, ATC	[ON] or [OFF]	As required – Color switches to green
11	MCDU R	OPTIONS	VIEWS	Panel & Wing View Bars and others	[ON] or [OFF]	As required – Color switches to green
12	MCDU R	OPTIONS	CHECKLISTS	CHECKL and COPILOT	ON (BOTH)	
13	MCDU R	OPTIONS	CHECKLISTS	INFOBAR	ON	
14	MCDU R	OPTIONS	CHECKLISTS	Various LIMITERS (APP & 250 KNOTS) & ILS	[ON] or [OFF]	As required – Color switches to green
15	MCDU R	OPTIONS	CHECKLISTS	AES	[ON] or [OFF]	As required – Color switches to green

8.2 Cockpit Preparation

COCKPIT PREPARATION

NO.	PANEL			ACTION			REMARK
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
16	MCDU	MAIN MENU	CHECKLIST	A = PUSH LSK1L	PUSH		Start Checklist / Co-Pilot - if selected
17	OVERHEAD	ELEC	3	BAT 1 + 2 (Batteries)	CHECK ON (BOTH)	Cop	
18	OVERHEAD	ELEC	6	EXT PWR (External Power)	ON	CoP	(if available – see MCDU MENU / DOORS)
19	OVERHEAD	EXT. LIGHTS	9	NAV. LIGHTS	CHECK ON	CoP	
20	PEDESTAL	ENG	5	ENG MASTER 1 + 2	CHECK OFF	CoP	
21	PEDESTAL	ENG	5	ENG MODE SEL	CHECK NORM	CoP	
22	ECAM	LAND GEAR	2	LANDING GEAR LEVER	CHECK DOWN	CoP	
23	PEDESTAL	P. BRAKE	7	PARKING BRAKE	CHECKED = OFF	CoP	FSX: . (period)
24	PEDESTAL	FLAPS	8	FLAPS LEVER	CHECK POSITION = 0	CoP	
25	PEDESTAL	SP. BRAKE	6	SPEED BREAK LEVER	CHECK RET. AND DISARMED	CoP	
26	PEDESTAL	THR LEVER	4	THRUST LEVERS	CHECK IDLE		
27	PEDESTAL	TCAS	10	TRANSPONDER MODE	STANDBY	CoP	Test then Standby Pos.
28	PEDESTAL	RADIO	1	RADIO CONTROL PANEL	ON	CoP	
29	ECAM	ECAM	5	ECAM RECALL (RCL) BUTTON	PRESS	CoP	
30	MAIN PANEL	ANTI SKID	10	ANTI SKID	CHECK ON	CoP	
31	MAIN PANEL	EFIS	3	FLIGHT DIRECTOR	CHECK ON	CoP	
32	OVERHEAD	SIGNS	12	EMERGENCY LIGHTS	ARM	CoP	
33	OVERHEAD	SIGNS	12	NO SMOKING SIGNS	AUTO or ON	CoP	
34	OVERHEAD	SIGNS	8	WING & ENGINE ANTI ICE	CHECK OFF	Cop	
35	OVERHEAD	PR.WI. HEAT	13	PROBE WINDOW HEAT	AUTO/OFF		
36	OVERHEAD	AIR COND.	7	HOTAIR, ENG. BLEED L+R, PACKS L+R	CHECK ON	Cop	(no white signs)
37	OVERHEAD	VENTILATION	14	BLOWER, EXTRACT, CAB. FANS	CHECK ON		(no white signs – INOP not animated)
38	OVERHEAD	ELETRIC	5	ENG. GENERATOR L+R	CHECK ON = FAULT	Cop	
39	OVERHEAD	ELETRIC	5	APU GENERATOR	CHECK ON		(only if EXT. POWER is ON)
40	OVERHEAD	FUEL	2	ALL FUEL PUMPS	PRESS	CoP	OFF should disappear
41	OVERHEAD	FUEL	2	ALL FUEL PUMPS = ON	CHECK		
42	OVERHEAD	HYDRAULICS	1	ELEC. YELLOW HYDR. PUMP	ON	CoP	
43	OVERHEAD	GPWS	15	ALL SWITCHES	CHECK ON	Cop	(no white signs)
44	OVERHEAD	EFCS	16	ALL SWITCHES	CHECK ON	Cop	(no white signs)
45	OVERHEAD	ADIRS	17	ADIRS (3x)	ON	CoP	
46	COCKPIT	EM.EQUIPMENT		ALL EQUIPEMT AVAILABLE AND OK	CHECK ON		Checklist complete
47	PEDESTAL	RADIO	1	SET FREQUENCIES	SET		If ATC is used
48	PEDESTAL	RADIO	1	ATC CLEARANCE	OBTAIN		If ATC is used

8.3 FMGS / MCDU – Data Insertion

COCKPIT PREPARATION – FMGS/MCDU DATA INSERTION

NO.	PANEL			ACTION		REMARK
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)	
48	MCDU	INIT 1		DEP and DEST AIRPORT	ENTER	EDDF/LOWW
49	MCDU	INIT 1		ALIGN IRS	PRESS	
50	MCDU	INIT 1		FLT NBR (Flight Number)	ENTER	LH320
51	MCDU	INIT 1		COST INDEX	ENTER	40
52	MCDU	INIT 1		CRZ FL (Cruise Flight Level)	ENTER	=310 (31.000 feet)
53	MCDU	F-PLAN		FLIGHTPLAN	ENTER	Speeds and altitudes are now calculated
54	MCDU	RAD NAV		ENTER VOR 2 FREQUENCY	ENTER	FFM

55	MCDU	INIT 2		BLOCK	**ENTER**	8,7
56	MCDU	INIT 2		ZFWCG/ZFW	CHECK	25.0/55.6
57	MCDU	PERF-TO		FLAPS / THS	**ENTER**	1/
58	MCDU	PERF-TO		FLEX TO TEMP	CHECK	63
59	MCDU	PERF-TO		V1, VR and V2	CHECK	145/149/150
60	MCDU	PERF-CLIMB		DATA	CHECK	
61	MCDU	PERF-CZR		DATA	CHECK	
62	MCDU	PERF-APPR		DATA	CHECK	
63	MCDU	PERF-GO ARD		DATA	CHECK	

8.4 Cockpit Preparation – Part 2

COCKPIT PREPARATION – Part 2						
NO.	**PANEL**			**ACTION**		**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)	
64	EFIS	FD / ILS	3	Button: LS	OFF	
65	EFIS	ND MOD/RGE	5 & 6	ND mode and range	**SET**	Mode: ARC / Range 10
66	EFIS	ADF/VOR	7	VOR / ADF select	AS REQUIRED	
67	FCU	ALTITUDE	3	First Altitude	**SET TO 12.000 Feet**	>than THR RED altitude
68	FCU	FCU	1 to 4	DASH-BALL-DASH-BALL-ALT-BALL-DASH	**CHECK**	
69	ECAM	ECAM	1	STATUS	CHECK	
70	PEDESTAL	RADIO	1	ATC - FREQUNCY	SET	If ATC is used
71	PEDESTAL	RADIO	1	ATC CLEARANCE	OBTAIN	If ATC is used
72	GLARESHIELD	ND-DISPL.	2	IRS ALIGN	CHECK	
73	MCDU	F-PLAN		F-PLAN PAGE	**SET**	

8.5 Before Pushback and Start

BEFORE PUSHBACK OR START							
NO.	**PANEL**			**ACTION**			**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
74	MCDUw	MAIN MENU	ACFT DOORS	CLOSE ALL DOORS	PUSH		**Start Checklist / Co-Pilot - if selected**
75	MCDU R	MAIN MENU	ACFT DOORS	ALL WINDOWS AND DOORS CLOSED	CHECK	CoP	
76	OVERHEAD	APU	10	APU MASTER and START	ON	CoP	START= available 10 sec after MASTER
77	OVERHEAD	APU	10	APU BLEED = ON	ON	CoP	
78	MCDU	ELEC	6	EXT PWR	OFF	CoP	
79	OVERHEAD	SIGNS	12	CABIN SIGNS (SEAT BELT SINGS = ON)	ON	CoP	
80	PEDESTAL	THR LEVER	4	LEVERS	CHECK IDLE		
81	PEDESTAL	P. BRAKE	7	PARKING BRAKE	SET to ON	CoP	FSX: CTRL +. (period)
82	MCDU2	MAIN MENU	GND SERV.	TRAFFIC CONES	REMOVE	CoP	
83	MCDU2	MAIN MENU	GND SERV.	WHEEL CHOCKS	REMOVE	CoP	
84	EFIS	AP SETTING	2	BARO REF	SET / X CHECK (Read out)	CoP	
85	OVERHEAD	EXT. LIGHTS	9	BEACON	ON	CoP	**Checklist complete**

8.6 Pushback

8.6.1 Engine Start with Pushback

ENGINE START – with pushback							
NO.	**PANEL**			**ACTION**			**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
86	MCDU	MAIN MENU	CHECKLIST	SELECT: "START WITH PUSH" = LSK5L			**Starts next Checklist / Co-Pilot - if selected**
87				„Flight Deck to Ground"			GROUND: „Go ahead"
88				„We have ATC clearance"			GROUND: „Roger"
89				„Confirm ground equipment = clear"			GROUND: "Clear"
90				"Starting pushback"			GROUND: "Roger"
91	PEDESTAL	P. BRAKE	7	PARKING BRAKE = OFF	SET to OFF		FSX: . (period)
92							GROUND: "OK. Starting Pushback"
93	PEDESTAL	ENGINE	5	ENG MODE SEL	IGN START		
94	PEDESTAL	ENGINE	5	MASTER SW 2	ON		
95	MAIN PANEL	E/WD	5a	No. 2 RUNNING UP	CHECK		
96	PEDESTAL	ENGINE	5	MASTER SW 1	ON		Engine 2 N1 > 20%
97	MAIN PANEL	E/WD	5a	No. 1 RUNNING UP	CHECK		
98				When in Position: Stop Pushback	STOP (SHIFT + P)		
99							GROUND: „Pushback complete"
100	PEDESTAL	P. BRAKE	7	PARKING BRAKE	ON		FSX: CTRL+.(period)
101							GROUND: "Have a good flight" – **CL complete**

8.6.2 Engine Start without Pushback

ENGINE START							
NO.	**PANEL**			**ACTION**			**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
102	MCDU	MAIN MENU	CHECKLIST	SELECT: "START" = LSK6L			**Starts next Checklist / Co-Pilot - if selected**
103				„Flight Deck to Ground"			GROUND: „Go ahead"
104				„We have ATC clearance"			GROUND: „Roger"
105				„Confirm ground equipment = clear"			GROUND: "Clear"
106				„Starting engines"			GROUND: „Roger"

107	PEDESTAL	ENGINE	5	ENG MODE SEL	IGN START		
108	PEDESTAL	ENGINE	5	MASTER SW 2	ON		
109	MAIN PANEL	E/WD	5a	No. 2 RUNNING UP	CHECK		
110	PEDESTAL	ENGINE	5	MASTER SW 1	ON		Engine 2 N1 > 20%
111	MAIN PANEL	E/WD	5a	No. 1 RUNNING UP	CHECK		
112				"Both Engines running"			GROUND: „Roger"
113							GROUND: "Have a good flight" – CL complete

8.7   After Engine Start

AFTER ENGINE START							
NO.	**PANEL**			**ACTION**			**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
114				ENGINE 1 & 2 are running for 15 sec			Start Checklist / Co-Pilot - if selected
115	PEDESTAL	ENGINE	5	ENG MODE SEL	NORM	CoP	
116	OVERHEAD	APU	10	APU BLEED	OFF	CoP	
117	OVERHEAD	APU	10	APU MASTER SW	OFF	CoP	
118	PEDESTAL	SPEED-BR.	6	GROUND SPOILERS	ARM	CoP	Mouse click: right
119	PEDESTAL	RUDDER	4	RUDDER TRIM	SET to 0 degree	CoP	
120	PEDESTAL	PITCH	4	PITCH TRIM	SET to THS Value		
121				AILERON, ELEVATOR and RUDDER	CHECK ALL 6 POSITIONS		
122	PEDESTAL	FLAPS	8	FLAPS	SET to 1	CoP	FSX: F7
123	OVERHEAD	ANTI-ICE	8	ENG ANTI ICE (1 &2)	ON / OFF		
124	OVERHEAD	ANTI-ICE	8	WING ANTI ICE	ON / OFF		
125	ECAM	ECAM	1	ECAM STATUS	CHECK		
126	ECAM	ECAM	1	ECAM DOOR PAGE	CHECK	CoP	
127				HAND SIGNAL RECEIVED			Checklist complete

8.8   TAXI

TAXI							
NO.	**PANEL**			**ACTION**			**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
128	PEDESTAL	RADIO	1	TAXI CLEARENCE	OBTAINED		If ATC is used
129	PEDESTAL	P. BRAKE	7	PARKING BRAKE	OFF		FSX: . (period)
130				GS> 10 Knots			Start Checklist / Co-Pilot - if selected
131	OVERHEAD	EXT. LIGHTS	9	NOSE LIGHT	TAXI	CoP	
132	PEDESTAL	P. BRAKE	7	PARKING BRAKE	OFF	Cop	FSX: . (period)
133	PEDESTAL	THR LEVER	4	LEVERS	AS REQUIRED		
134				PRESS BRAKES to listen for PnF CALL	PRESS PEDAL / RELEASE		
135	MAIN PANEL	AUTO BRAKE	6	SET TO	MAX	CoP	
136	MCDU			TAKEOFF DATA	REVIEW	CoP	
137	FCU	HDG / ALT	2 & 3	FCU HDG/ALT = DASH-BALL-DASH-BALL	CHECK		IF ALT NOT SET CoP sets it to 7000ft
138				ALL DISPLAYS ARE ON	CHECK		
139	ECAM	PANEL	5	TO CONFIG	PRESS	CoP	
140	MAIN PANEL	E/WD	5a	TO MEMO	CHECK NO BLUE	CoP	Checklist complete
141	EFIS	FD / ILS	3	FD	CHECK ON		
142	PEDESTAL	TRANSPOND.	9	ATC CODE	CONFIRM / SET		If ATC is used

8.9   Before Takeoff

BEFORE TAKEOFF							
NO.	**PANEL**			**ACTION**			**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
143				INFORMATION TO CABIN CREW			"Please prepare for Takeoff"
144	OVERHEAD	EXT. LIGHTS	9	TAXI TO RUNWAY HOLDING POINT			Start Checklist / Co-Pilot please see below
145	ECAM	WHEEL PAGE	1	BRAKE TEMP = below 150	CHECK	Cop	CoP set Brake Fans On if Brake Temp > 150
146	MAIN PANEL	BRAKE FAN	11	BRAKE FANS	OFF	Cop	
147	PEDESTAL	ENGINE	5	ENG MODE SEL = NORMAL	CHECK		
148	PEDESTAL	TCAS	10	TCAS TA or TA/RA plus TILT ABOVE	SET	CoP	
149	OVERHEAD	EXT. LIGHTS	9	EXT. LIGHTS	SET	CoP	Strobes, Land. and Nose Lights
150				PF SLIDING TABLE	STOWED	Cop	Checklist complete
151	MAIN PANEL	N/SKID NW	10	A/SKID & NW STRG	CHECK = ON		
152	PEDESTAL	RADIO	1	TAKEOFF / LINE UP CLEAR	OBTAIN		If ATC is used
153	PEDESTAL	RADIO	1	ATC (if no AUTO position)	ON		If ATC is used

8.10   Takeoff (Part 1)

TAKEOFF – Part 1						
NO	**PANEL**			**ACTION**		**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)	
154	GLARESHIELD	CHRONO	7	CHRONO	START	Push upper right button
155	PEDESTAL	THR LEVER	4	SET LEVERS TO	FLEX	

8.11   Takeoff (Part 2)

TAKEOFF – Part 2		
NO.	PANEL	ACTION	REMARK

NO.	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		REMARK
156				Takeoff thrust is set			Start Checklist / Co-Pilot - if selected
157				"Takeoff"			
158				"FMA"	"FMA checked, Power set"		
159					"100 Knots"		At 100
160				"Checked"			
161					"V1"		At GS = V1
162					"Rotate"		At GS = VR
163					"Positive climb"		Radio Alt >50 ft, VS > 100 ft/min
164	MAIN PANEL	GEAR	7	"Gear up"	GEAR UP	CoP	FSX: G
165	PEDESTAL	SPEED-BR.	6	GROUND SPOILERS	DISARM	CoP	FSX: /
166	MAIN PANEL	GEAR	7	GEAR STOWED	"Gear is up , lights off"		Radio Alt >50 ft, VS > 100 ft/min
167				At Thrust Red. / Acceleration Alt.			
168	PEDESTAL	THR LEVER	4	SET LEVERS TO	"CLIMB THRUST"		Blinking announcement in FMA
169	FCU	AP	5	AUTOPILOT	"AUTOPILOT ON"		
170				At "Green Dot Speed" / "S-Speed"			
171	PEDESTAL	FLAPS	8	"Flaps up"	SELECT	CoP	FSX: F6
172					"Flaps up"		Checklist complete
173	FCU	ALTITUDE	3	Cruize Altitude			SET TO 31.000 feet

8.12 After Takeoff

AFTER TAKEOFF

NO.	PANEL			ACTION			REMARK
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
174	EFIS	INFOR.	4	EFIS OPTION	ARPT		
175	PEDESTAL	RADIO	1	RADIO NAV	CHECK		
176	PEDESTAL	ECAM	1	ECAM MENU	REVIEW		
177	MCDU	PROG		OPT / MAX ALTITUDE	CHECK		
178				FLAPS UP and RETRACTED			Start Checklist / Co-Pilot - if selected
179	PEDESTAL	ENGINE	5	ENG MODE SEL = NORMAL	CHECK	Cop	
180	PEDESTAL	SPEED-BR.	6	GROUND SPOILERS	DISARMED	CoP	FSX: /
181	PEDESTAL	FLAPS	8	FLAPS UP and RETRACTED	CHECK	CoP	FSX: F6
182	ECAM	GEAR	2	GEAR IS UP and STOWED	„Gear is up, Lights off"	CoP	
183	OVERHEAD	EXT. LIGHTS	9	LIGHTS OFF	OFF	CoP	
184	OVERHEAD	AIR COND	7	1 st and 2ND PACK are ON	CHECK	Cop	
185	OVERHEAD	ANTI-ICE	8	ANTI ICE (1 &2)	AS REQUIRED		=OFF
186	PEDESTAL	TCAS	10	MODE: ABOVE TILT	CHECK		
187	EFIS	A PRESSURE	2	BARO REF	X-CHECK (Read out)		Checklist complete

8.13 Climb

CLIMB

NO.	PANEL			ACTION			REMARK
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
188				At Transition Altitude			Start Checklist / Co-Pilot - if selected
189	EFIS	A PRESSURE	2	BARO REF to STD	SET / X CHECK	CoP	
190				At 10.000 feet			
191					"Passing 10.000"		
192	OVERHEAD	EXT. LIGHTS	9	LANDING, NOSE,WING, TAXI LIGHTS	LIGHTS OFF	CoP	
193	FCU	ALTITUDE	3	Cruise Altitude	SET		=31.000 feet
194				Alt > 28.000 feet or FAM "ALT / ALT CRZ"			
195	PEDESTAL	TCAS	10	TCAS TA or TA/RA plus TILT NORMAL	SET	CoP	
196	OVERHEAD	SIGNS	11	SEAT BELTS	OFF	CoP	
197				SLIDING TABLE - COPILOT	EXTENDED	CoP	Checklist complete

8.14 Cruise

CRUISE

NO.	PANEL			ACTION			REMARK
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
198	PEDESTAL	ECAM	1	ECAM MEMO / SYS PAGES	REVIEW		
199	MCDU	Var.PAGES		FLIGHT PROGRESS	CHECK		
200	MCDU	FUEL PRED		FUEL	MONITOR		
201	MCDU	PROG		NAV ACCURANCY	CHECK		
202	OVERHEAD	AIR COND	7	CABIN TEMP	MONITOR		

8.15 Descent Preparation

DESCENT PREPARATION

NO.	PANEL			ACTION			REMARK
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
203				9 NM before TOD			Start Checklist / Co-Pilot - if selected
204				SEAT BELTS = ON	SET	Cop	
205	OVERHEAD	ANTI-ICE	8	ANTI ICE = OFF	CHECK		
206	PEDESTAL	RADIO	1	LANDING INFORMATION	RECEIVED		If ATC is used
207	EFIS	A.PRESSURE	2	BARO REF = STANDARD	CHECK	Cop	

208	MCDU	PERF.	APPR	AIR PRESSURE ARRIVAL AIRPORT	"Checked" and readout	Cop	QNH= 1013
209	MCDU	PERF.	APPR	DECISION HEIGHT	"Checked"	Cop	DH = 200
210	MCDU	PERF.	APPR	LDG CONF (Flaps)	"Checked"	CoP	Checklist complete

8.16 Descent

DESCENT							
NO.	**PANEL**			**ACTION**			**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
211	FCU	ALT	3	DESCENT = INSERT NEW HEIGHT	INITIATE = PUSH KNOB		= 5.000
212	MCDU	Var.PAGES		DESCENT DATA	INSERT		
213	MAIN PANEL	PFD	1	DESCENT	MONITOR		
214	PEDESTAL	SP BRAKES	6	SET	AS REQUIRED		
215				Vert. Mode = DES / Desc.Prep.CL = compl.			Starts next Checklist / Co-Pilot - if selected
216	MAIN PANEL	PFD	1	FMA	CHECK		
217	PEDESTAL	TCAS	10	TCAS TA or TA RA plus TILT BELOW	SET	CoP	
218				At 10.000 feet:			
219	OVERHEAD	EXT. LIGHTS	9	LAND LIGHTS	ON	CoP	
220	EFIS	FD / ILS	3	ILS LOCALIZER (LS)	PUSH	CoP	EFIS
221				At Transition Altitude			= 5000
222	EFIS	A PRESSURE	2	BARO REF to actual pressure value	SET / X CHECK	CoP	Checklist complete

8.17 Approach

APPROACH							
NO.	**PANEL**			**ACTION**			**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
223				Alt. < 7.000 ft AGL / Alt < Trans.Alt			Starts next Checklist / Co-Pilot - if selected
224	ECAM	ECAM	1	ECAM STATUS	CHECK		
225				SLIDING TABLE S - STOWED	STOWED	CoP	
226	OVERHEAD	SIGNS	11	CABIN SIGNS = ON	CHECK		
227	MCDU	PROG		NAV ACCURANCY	CHECK		
228	EFIS	A.PRESSURE	2	BARO REF CROSS CHECK	SET and Read out	CoP	Checklist complete
229				Initial approach:			
230	OVERHEAD	SIGNS	11	SEAT BELTS	CHECK ON		AUTO is also OK
231	PEDESTAL	ENGINE	5	ENG MODE	CHECK NORM		
232				Approx. 15 NM from touchdown:			
233	MCDU	PROG		NAV ACCURANCY	MONITOR		
234	MAIN PANEL	PFD	1	POSITIONING	MONITOR		

8.18 Final

FINAL							
NO.	**PANEL**			**ACTION**			**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
235	MCDU	PERF		APPR PHASE	SELECT	CoP	Starts next Checklist / Co-Pilot - if selected
236	FCU	LOC	6	LOC	PRESS		
237				Green Dot Speed			
238	PEDESTAL	FLAPS	8	FLAPS 1	SELECT	CoP	FSX: F7
239				S-Speed			
240	PEDESTAL	FLAPS	8	FLAP 2	SET		FSX: F7 OPTIONAL
240				Localizer captured			
241	MAIN PANEL	PFD	1	LOCALIZER CAPTURED	CHECK		
242				Gkidescope becomes active			
243	FCU	APPR	9	APPR	PRESS		
244	FCU	AP	5	BOTH AP	ENGAGE		
245				Glidescope captured			
246	MAIN PANEL	PFD	1	G/S CAPTURE	CHECK		
247				Radio Alt. < 2.000 ft			
248	PEDESTAL	FLAPS	8	FLAPS 2	SELECT	CoP	FSX: F7
249	MAIN PANEL	GEAR	7	L/G DOWN	SELECT	CoP	FSX: G
250				When L/G down, below REF SPEED			
251	PEDESTAL	FLAPS	8	FLAPS 3	SELECT	CoP	FSX: F7
252				Next REF SPEED:			
253	PEDESTAL	FLAPS	8	FLAPS FULL	SELECT	CoP	FSX: F7 / Checklist complete
254	FCU	SPD	1	Set speed to VApp	SET		= 139
255	PEDESTAL	TCAS	10	TCAS	CHECK TA ONLY		
256	MAIN PANEL	PFD	1	FMA	CHECK		
257	MAIN PANEL	PFD	1	LOC CAPTURE	MONITOR		
258	ECAM	ECAM	1	ECAM WHEEL PAGE	CHECK		
259	FCU	ATHR	7	A/THR	CHECK SPD		
260	OVERHEAD	ANTI-ICE	8	WING ANTI ICE	CHECK OFF		

8.19 Landing

LANDING		
NO.	**PANEL**	**ACTION**	**REMARK**

	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
261				Flaps in Landing Config. (MCDU Settings)			**Start next Checklist / Co-Pilot - if selected**
262	MAIN PANEL	GEAR	7	LAND. GEAR = FULL EXTRACTED	CHECK	CoP	
263	PEDESTAL	SP. BRAKEs	6	GROUND SPOILERS = ARMED	ARM	CoP	FSX: Right mouse click
264	MAIN PANEL	AUTO BRAKE	6	AUTO BRAKES = MEDIUM	SET	CoP	
265	OVERHEAD	EXT. LIGHTS	9	TAXI LIGHTS / LANDING LIGHTS = ON	ON	CoP	
266	FCU	ALT	3	GO AROUND ALT > 3.000 ft	SET TO 5.000 FEET	CoP	Just enter - do **not** push knob
267	MAIN PANEL	EWD	5	LANDING MEMO	CHECK NO BLUE		
268				At 20 feet:			
269				FLARE	PERFORM		
270	MAIN PANEL	PDF	1	ALTITUDE	MONITOR		
271	PEDESTAL	THR LEVER	4	THRUST LEVERS	IDLE		FSX: F1
272				At touchdown:			
273	PEDESTAL	THR LEVER	4	REV	MAX		FSX: F2
274				BRAKES	AS REQUIRED		
275				At 70 knots:			
276	PEDESTAL	THR LEVER	4	REV	IDLE		FSX: F1
277				At taxi speed:			
278	PEDESTAL	THR LEVER	4	REV	STOW	CoP	
279				Before 30 knots:			
280	MAIN PANEL	AUTO BRAKE	6	AUTOBRK	DISENGAGE	CoP	**Checklist complete**
281	FCU	AP	5	AP (if applicable)	OFF	CoP	FSX: Z

8.20 After Landing

AFTER LANDING							
NO.	**PANEL**			**ACTION**			**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
282				Leaving - Distance to the Localizer			**Start Checklist / Co-Pilot - if selected**
283	OVERHEAD	EXT. LIGHTS	9	LANDING LIGHTS	OFF	CoP	
284	OVERHEAD	EXT. LIGHTS	9	STROBE LIGHT	OFF	CoP	
285	OVERHEAD	EXT. LIGHTS	9	TAXI LIGHTS	TAXI	CoP	
286	EFIS	FD / ILS	3	ILS LOCALIZER (LS)	OFF	CoP	EFIS
287	FCU	EXPEDITE	8	EXPED	OFF	CoP	FCU – If used for descent
288	PEDESTAL	SP.BRAKES	6	GRND SPLRS	DISARM	CoP	FSX: /
289	PEDESTAL	ENGINE	5	ENG MODE SEL	NORM	Cop	
290	PEDESTAL	FLAPS	8	FLAPS	RETRACT	CoP	FSX: F6
291	PEDESTAL	TCAS	10	TCAS MODE SEL	STBY	CoP	
292	ECAM	WHEEL PAGE	1	BRAKE TEMP all wheels = < 150 degrees	CHECK		
293	OVERHEAD	APU	10	APU MASTER	ON		

8.21 Parking

PARKING							
NO.	**PANEL**			**ACTION**			**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)		
294	PEDESTAL	RADIO	1	ATC (if no AUTO position)	STBY / OFF		
295	OVERHEAD	ANTI-ICE	8	ANTI ICE (WING and ENGINES 1&2)	CHECK = OFF		
296	GLARESHIELD	CHRONO	7	CHRONO	STOP		Push upper right button
297	PEDESTAL	RADIO	1	GROUND CONTACT	ESTABLISH		If ATC is used
298	PEDESTAL	P.BRAKE	7	PARKING BRAKE ON	SET ON		FSX: CTRL + . (period)
299	PEDESTAL	ENGINE	5	ENG MASTER 1 & 2	OFF		**Start Checklist / Co-Pilot - if selected**
300	MCDU R	GRND SERV		CHOCKS	SET	CoP	
301	PEDESTAL	P.BRAKE	7	PARKING BRAKE	OFF	CoP	FSX: . (period)
302	OVERHEAD	SIGNS	11	SEAT BELTS	OFF	CoP	
303	OVERHEAD	EXT. LIGHTS	9	BEACON LIGHT	OFF	CoP	
304	OVERHEAD	EXT. LIGHTS	9	STROBES, LAND., TAXI and RUNWAY L.	OFF	CoP	
305	OVERHEAD	ANTI-ICE	8	WING & ENGINE ANTI ICE = OFF	CHECK	Cop	
306	OVERHEAD	FUEL	2	FUEL PUMPS	OFF	CoP	OFF should appear / **Checklist complete**
307	MCDU R	GRND SERV		CONES	SET		
308	MCDU R	GRND SERV		ESTABLISH EXTERNAL POWER	CONNECT		
309	OVERHEAD	EXT POWER	6	EXT. POWER = AVAILABLE	SET TO ON		
310	OVERHEAD	APU	10	APU MASTER	SET TO OFF		
311	MCDU	MENU	ACFT DOORS	DOORS	OPEN (AS REQUIRED)		

8.22 Securing Aircraft

SECURING AIRCRAFT						
NO.	**PANEL**			**ACTION**		**REMARK**
	TYP	PART (Name)	PART (No.)	PF (PILOT FLYING)	PnF (PILOT NON FLYING)	
312	OVERHEAD	ADIRS		ADIRS (1 + 2 + 3)	OFF	
313	OVERHEAD	EXT. LIGHTS	9	NAV. LIGHTS	OFF	
314	OVERHEAD	SIGNS	11	NO SMOKING & EMERGENCY LIGHT	OFF	
315	MCDU	MENU	ACFT DOORS	DOORS	CLOSE (AS REQUIRED)	
316	OVERHEAD	EXT. PWR	6	EXT PWR	AS REQUIRED	
317	OVERHEAD	ELEC	5	GEN 1 + 2 (Electric Generators)	PRESS	OFF should appear
318	PEDESTAL	INT. LIGHT	3	INTEG LT	OFF	

319	MAIN PANEL	PFD LIGHT	8	SWITCH	OFF		
320	MAIN PANEL	ND LIGHT	8	SWITCH	OFF		
321	ECAM	DIMMER	4	SWITCH UPPER and LOWER	OFF		
322	OVERHEAD	BATTERIES	4	BAT 1 + 2	OFF		