# Aerosoft Airbus A318/319/320/321

Volume **6**
Step By Step Tutorial
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Version 06-01-07

## RECORD OF REVISIONS

| Revision nº | Issue date | Description |
|---|---|---|
| 01-01 | 19/09/2014 | First issue |
| 01-02 | 22/09/2014 | IAE behavior during startup added (#98 and 112) / Call #162 / Picture 67 / as well as chapter 5.22 (FL change) changed |
| 01-03 | 25/09/2014 | Various changes based on pilot, developer and user feedback |
| 01-04 | 15/10/2014 | #48 ATIS frequency, #148 start conditions, #234 start APPR CL, picture #22 LOAD-/FUEL PLANNER changed, #283 and 284 added, #59 changed, 4.6.5 und 4.6.6 = TILLER option added, EXT Lights adjusted and STEEP APPROACH SOP added |
| 01-05 | 09/11/2014 | Pause before T/D: Distance changed to 20 NM (chapter 4.6.5)<br>GO AROUND procedure modified (chapter 5.23)<br>COG Calculation / THS aligned with VC Trim Scale and Fuelplanner (#59)<br>A320/321 added to document |
| 01-06 | 16/11/2014 | #89 Pushback details added, 4.7 limits added |
| 01-07 | 07/04/2015 | • WXR - Turbulences added (2.1.3)<br>• Save and Load a flight (3.5)<br>• MCDU – AIRCRAFT USER STATES: Deleted from MCDU2 menu (4.3)<br>• Ground Crew Sound/Calls: Volume to menu added (4.6.1)<br>• MCDU Menu – define FS - P3D Infobar set lower (4.6.2)<br>• CL Config Menü AES Pusback ON/OFF and Infobar: GSX added (4.6.3)<br>• AES/GSX und AFTER START CL: Timing aligned (4.6.3)<br>• Connected Flight Deck (4.9)<br>• Pushback: Distance set to minimum value = 9m (5.7.1 #89)<br>• ECAM Instruction – BRAKE TOO HOT: Values changed to 150/100° (5.10 #149)<br>• Explanations for the use of speedbrakes (5.21 #253)<br>• Use of 2nd Autopilot (5.21 - #256)<br>• Appr. Speed Restr. FINAL CL – Landing Memo – <160 kts added as condition 5.21 #259a<br>• VECTOR APPROACH and use of DIR TO / RADIAL IN for tutorial flight (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 A319-112 CFM or IAE** (any airline) |
| **Weather:** | Fair weather |
| **Location:** | Innsbruck/Austria (LOWI) at Parking 5 – RAMP GA LARGE |
| **Time and Season:** | Day – any season |

The difference between **CFM** and **IAE** types are the engines built by different manufacturers.

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
- LOWI – Departure Airport: AI may use 26 for approaches, causing immediate TA's and RA's on takeoff.
- LFMN – Arrival Airport: Apparently default ATC and AI use the opposing runway 22R.

If the aircraft it is not in the "COLD DARK" state when you load it (maybe you already set a DEFAULT aircraft state – see chapter 4.3 for details), 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 5.26: Overhead Panel –. But the **easiest** way to make those settings (and necessary for this tutorial flight) is to use the ACFT STATE function 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 (Vol1-InFSX EN) of the Aerosoft Airbus A318/319/320/321 documentation (chapter FSX Settings) which you will find in the FSX-folder under Aerosoft /Airbus318_A319  / Documentation / or  Aerosoft /Airbus320_A321  / Documentation /

### 1.3    Simulation Rate / Time Compression:

Especially during longer flights the simulation rate in the FSX Options Menu is often speeded up from normal in order to shorten the flight. We recommend that you do not do this, as it can cause problems. This is because the flight avionics of Airbus 318/319/320/321 are completely reprogrammed and do not use any FSX standard features. This means that the avionics are not compatible with the time compression features of FSX.

Additionally it is depending on the performance of your computer. In the meantime we got the experience that "time compression" works perfectly on some high-end machines.

## 2.    Panels and Instruments:

In the following paragraph the various panel and cockpit views are explained together with the terms used in the tutorial, this will enable the user to find the knobs, switches and buttons that the tutorial refers to. They are the Glareshield, Main Panel, MCDU, ECAM, Pedestal/Radio and the Overhead Panel.

The Aerosoft Airbus A318/319/320/321 does not have a 2D panel - only a virtual cockpit, therefore to make it easier to use ,6 fixed virtual 2D cockpit views have been created. These 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 use the [A] key to toggle between the various views like left MCDU, right MCDU, etc.



**Picture 1: Default VC view, selected with the** [S] **key and where needed cycled to this view with the** [A] **key.**



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

Picture 3: ECAM and Upper Pedestal view, selected with [F10]



Picture 4: Pedestal view, selected with [F11]



Picture 5: 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 6: 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
12 = EGPWS – Terrain on ND switch
13 = ISIS – Standby Altimeter

### 2.1.1. PFD - Primary Flight Display



Picture 7: PFD – Primary Flight Display



Integrated Standby Instruments System (ISIS)

1= FMA – Flight Mode 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 (Standard)



Picture 8: ND – Navigation Display (Standard)

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

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

3 = Lateral flight path

4= Chronometer time

| Indication | Description |
|---|---|
|  | **Speed Change**: Indicates the point where the aircraft will initiate an automatic acceleration or deceleration from current speed to new computed speed in case of SPD LIM, SPD CSTR, or HOLDING SPD (including 250 knots below 10,000). |
|  | **Deceleration Point:** Indicates where the aircraft will initiate an automatic deceleration toward VAPP. Managed NAV mode and managed speed must be engaged. |
|  | **Altitude Constraints:** Constraint is predicted to be met when the aircraft is in managed lateral and vertical modes. |
|  | Position where the aircraft will level-off at the FCU selected altitude. The same symbol will indicate a level-off from a managed climb (CLB) or selected climb (OP CLB). |
|  | Position where the aircraft will level-off at the constrained altitude entered in the MCDU. The managed CLB mode must be engaged for the altitude constraint symbol to appear and be honored. |
|  | Position where the aircraft will level-off at the FCU selected altitude. The same symbol will indicate a level-off from a managed decent (DES) or selected descent (OP DES). |
|  | Position where the aircraft will level-off at the constrained altitude entered in the MCDU. The managed DES mode must be engaged for the altitude constraint symbol to appear and be honored. |
|  | Start of climb with the CLB mode armed. |
|  | Start of climb with the CLB mode not armed. |
|  | Top of Descent or continue descent with DES armed. |
|  | Top of Descent or continue descent with DES not armed. |

**Picture 9: ND – Symbols**

### 2.1.3. ND – Navigation Display (WXR – Weather Radar)



Ground Clutter (only available in MAN mode)

**Picture 10: ND – Navigation Display (WXR)**

1= TILT setting (green = MULTISCAN AUTO mode / blue = MAN mode)

The Airbus WXR works with FSX weather as well as with any weather add-on and displays what is "injected" into the FSX weather.

**Weather Radar Display**

- The weather radar display is depicted on the ND in any mode except PLAN. The selected ND range scale will control the weather radar range.
- The radar returns will appear in green, yellow and red depending on the precipitation intensity. Black means "no" perception or perception with very low intensity (below level). The antenna tilt angle will be displayed in the lower right-hand corner of the ND and is the angle between the horizon and the radar beam axis. When MULTISCAN manual calibration mode is selected, MAN and the setting appear in blue whereas in AUTO mode the setting appears in green.
- If the TERR ON ND is selected on, the ND displays the surrounding terrain from the stored database, and the weather radar display will be suppressed.
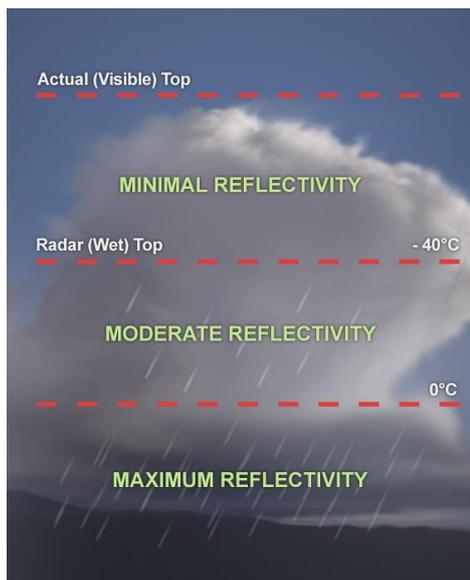


Picture 11: WXR - Reflectivity

**WXR-Panel**



Picture 12: WXR-Panel (Pedestal 2.5. # 11)

1= System = ON =1 or OFF – 2 is not modeled
2 = Gain control
3 = MULTISCAN (Manual and Auto)
4 = Ground clutter suspension (Off and Auto) – only in MAN mode
5 = TILT (UP and DOWN)
6 = MODE

The following features are modeled respectively can be operated in the Aerosoft A318/319/320/321 Airbus:

- GAIN control
- MULTISCAN  (MAN and AUTO)
- GCS (OFF and AUTO)
- Antenna TILT
- Mode
- Range control of the ND (please see EFIS 2.1.5 #6)

Whereas the range control is handled on the EFIS for the other settings the WXR panel is used. To get the maximum range / display it is necessary to have set FSX SETTINGS / WEATHER / CLOUD DRAW DISTANCE to the maximum (if a weather tool is used apply the same settings to it).

**AUTO MULTISCAN MODE**

In auto mode (MULTISCAN switch set to AUTO) the tilt is automatically controlled. Two beams (upper and lower) are merged together to become one picture representing weather in the possible vertical flight path of aircraft.

Also in MULTISCAN AUTO mode the GCS (ground clutter suspension) is usually in AUTO mode and so the ground clutter will be suppressed. Ground clutter can be suppressed by GCS in MULTISCAN mode (AUTO), but not in manual mode (MAN) – using a lower tilt it will always be visible (except water surface, which will be displayed in black).

**MAN MULTISCAN MODE**

In manual mode (MULTISCAN switch to MAN) the radar beam is controlled via the TILT rotary knob.

The flight crew uses the following three features to operate the Collins WXR2100 Weather Radar in the Airbus A318/319/320/321 family (if MULTISCAN MAN is selected):

- **Gain control**, which adjusts the sensitivity of the receiver (and should usually be set to AUTO).
- **Antenna tilt**, that is the angle between the centre of the beam and the horizon
- **Range control of the ND**, which has an essential influence on the optimum tilt setting

The recommended TILT settings for the various FLIGHT PHASES based on ALTITUDE and ND-RANGE according to AIRBUS documentation (Flight Operations Briefing Notes) are:

| Flight Phase | Recommendations | Remarks |
|---|---|---|
| **Taxi** | Set ND to 10 NM range –<br>Tilt down, then up: Check appearance / disappearance of ground returns | *Radar check must be performed away from people* |
| **Takeoff** | Scan up to 15° UP for weather return, if significant weather is suspected- Select tilt at **+4° UP** for takeoff | *Scan along the departure path* |
| **Climb** | Select negative tilt, maintain ground returns on top of ND as the aircraft climbs (suggestions): | *Change TILT according to altitude and ND range* |

| Flight Level | ND-Range | | | | |
|---|---|---|---|---|---|
| | 10 | 20 | 40 | 80 | 160 |
| | TILT SETTING | | | | |
| 5.000 | | -0.9°DN | -0.1°DN | | |
| 10.000 | | -2.7°DN | -0.8°DN | -0.5°DN | -0.4°DN |
| 15.000 | | -4.5°DN | -1.4°DN | -1.0°DN | -0.9°DN |
| 20.000 | | -6.3°DN | -2.8°DN | -1.6°DN | -1.5°DN |
| 25.000 | | -8.8°DN | -4.3°DN | -2.4°DN | -2.1°DN |
| 30.000 | | -10.8°DN | -5.4°DN | -2.8°DN | -2.4°DN |

| Cruise | Select negative tilt and maintain ground returns on top of ND. As a rule of thumb use the following suggestions: | *No ground returns beyond line of sight:*<br><br>*FL370 => 240 NM*<br><br>*FL250 => 200 NM* |
|---|---|---|

| Flight Level | ND-Range | | | | |
|---|---|---|---|---|---|
| | **20** | **40** | **80** | **160** | **320** |
| | TILT-Setting | | | | |
| **31.000** | -12.1°DN | -5.8°DN | -3.1°DN | -2.5°DN | -2.5°DN |

| Descent | Adjust tilt to maintain ground returns on top of ND. As a rule of thumb: | |
|---|---|---|

| Flight Level | ND-Range | | | | |
|---|---|---|---|---|---|
| | **10** | **20** | **40** | **80** | **160** |
| | TILT SETTING | | | | |
| **30.000** | ~ +3.0 °UP | | | | |
| **25.000** | ~ +2.5 °UP | | | | |
| **20.000** | ~ +2.0 °UP | | | | |
| **15.000** | ~ +3.0 °UP | | | | |
| **10.000** | ~ +2.0 °UP | | | | |
| **5.000** | ~ +1.0 °UP | | | | |
| **3.000** | ~ +0.5 °UP | | | | |

| Approach | Select tilt: **+4° UP** | *To avoid ground returns* |
|---|---|---|

If you want to get more information on the WXR subject please have a look into the "Collins_WXR-2100_Operators_Guide.pdf" as well as into AIRBUS documentation "Flight Operations Briefing Notes – Adverse Weather Operations – Optimum Use of Weather Radar" which you can download from the Internet.

**MODE**
Turbulence is displayed in magenta out to maximal 40 nautical miles for all selected ranges (as in real Airbus). No detecting of clear-air turbulence as only areas of precipitation are evaluated.

**WX:**     Normal WX Radar as it was implemented so far (precipitation targets).

**WX+T**:     Precipitation targets with turbulence information overlaid.

**TURB:**     Only turbulence information without precipitation targets.

**MAP:**     Enables display of all radar echoes including terrain and precipitation information, but the receiver sensitivity for precipitation returns is decreased so that terrain characteristics are pointed out. No turbulence information is displayed.
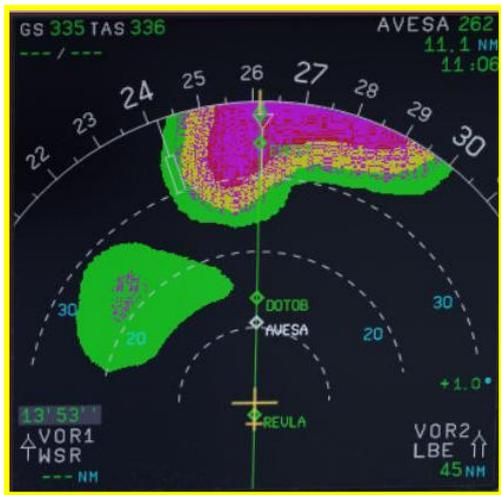
Picture 13: ND – Navigation Display (Turbulences -magenta - )

### 2.1.4. ND – Navigation Display (EGPWS - Terrain on ND)



Picture 14: ND – Navigation Display (Takeoff at LOWI 08)

1= Lowest and highest elevation

**EGPWS (**Enhanced Ground Proximity Warning System) **terrain picture**
The ND displays the EGPWS terrain picture, when TERR ON ND switch is selected ON and the ND is not in PLAN mode. The terrain picture replaces the weather radar image.
The EGPWS is automatically switched in case of a threat but suppressed if the following conditions are met:

- **Departure:** During first 60 seconds after takeoff (after getting airborne). Therefore the FMA modes for thrust levers (TOGA, FLX, MAN TOGA, MAN MCT) and the SimOnGround flag are taken into account.
- **Approach:** Gear down + (Flaps 3 or 4 (full))
- **Approach:** ILS is tuned and successful received and glideslope and localizer have both a deviation of less than 2 dots
- **GoAround:** During first 60 seconds after GO AROUND. Therefore the FMA modes for thrust levers (TOGA, FLX, MAN TOGA, MAN MCT), flap position and flight status (GA) and the gear handle movement into up position are taken into account.

**Lowest and highest elevation**
Minimum and maximum elevations encountered with selected range, are respectively displayed in this square using the colors described below.

**Terrain Display**

The terrain appears in different colors and densities according to its relative height. The reference altitude is projected downward from the actual aircraft altitude to provide a 30 second advanced display of terrain when descending at more than 1000 FPM.

| Indication | Description |
|---|---|
| 🔴 | **High density red**: Terrain is at least 2000 ft. above aircraft altitude. |
| 🟡 | **High density yellow**: Terrain is between 1000 ft. and 2000 ft. above aircraft altitude |
| 🟢 | **Low density green**: Terrain is between -250 ft (gear down) or -500 ft (gear up) to 1000 ft above aircraft altitude. |
| 🟢 | **Medium density green**: Terrain is between 250 ft. (gear down) or 500 ft. (gear up) to 1000 ft. below aircraft altitude. |
| 🟢 | **High density green**: Terrain is between 1000 ft. to 2000 ft. below aircraft altitude. |

### 2.1.5.  EFIS – Electronic Flight Information System



Picture 15: EFIS – Electronic Flight Information System

1 = Air Pressure Display

2 = AP (Hg or hPa selector and setting knob)

3= Flight Director / ILS

4 = Flight Plan Information on ND

5 = ND mode setting knob

6 = ND range setting knob

7 = ADF / VOR 1 and 2 switch

### 2.1.6.  FCU – Flight Control Unit



Picture 16: FCU – Flight Control Unit

1 = Speed (display and setting knob)

2 = Heading (display and setting knob)

3 = Altitude (display and setting knob)

4 = Climb / Descent (display/setting knob)

5 = Autopilot 1 and 2

6 = ILS lateral localizer

7 = Auto throttle

8 = Expedite

9 = Approach ILS lateral / vertical localizer

10 = Heading Track / V/S Flight Path switch

### 2.1.7.  E/WD – Engine- and  Warning Display



Picture 17: E/WD–Engine Warning Display with IAE resp. plane with CFM Engines

1= Engine Information

2 = FOB = Fuel on board

3= FLAPS Status

4 = Status Information, Takeoff- or Landing-Menu

## 2.2  Overhead Panel
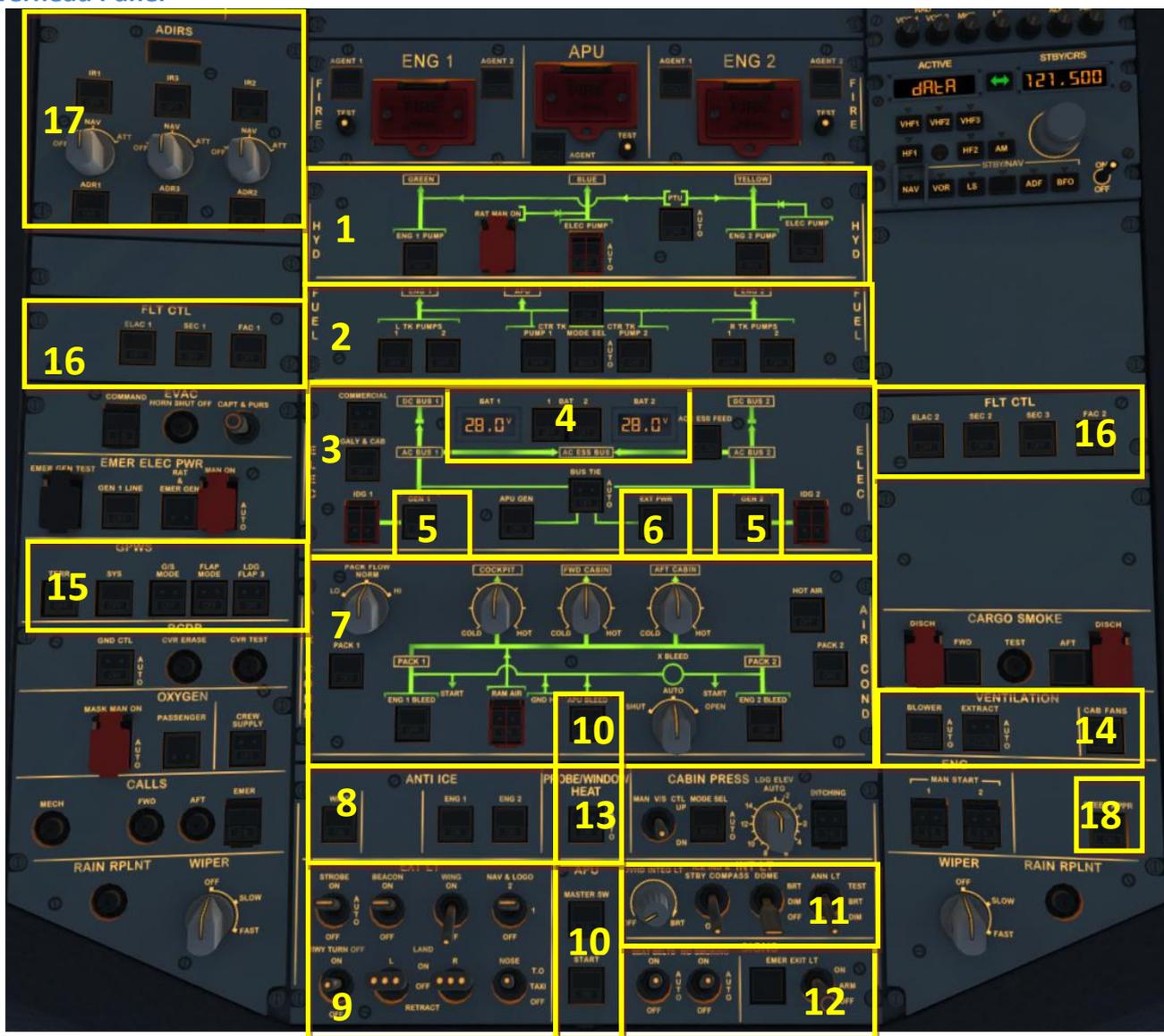


Picture 18: Overhead Panel (F12)

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 = GPWS (Ground Proximity Warning System)
16 = Emergency Flight Control System
17 = ADIRS
18 = STEEP APPR. Button (A318 only)

## 2.3 FMGC - MCDU – Multifunction Control and Display Unit

**Picture 19: MCDU (SHIFT+2)**

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 20: 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
6 = CPDLC = Controller Pilot Data Link Communication system

## 2.5 Pedestal



Picture 21: 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
11 = WXR Panel

## 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 function will find a lot of information in the various manuals which you will find in the main FSX-folder under Aerosoft/Airbus A318_A319/Documentation or Aerosoft/Airbus A320_A321/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 Airbus A318/319/320 and 321. These lists are part of and used in this tutorial as well as in the checklist function (please see chapter 4.7 and chapter 5.1 for details).

### 3.4    Using the Switches and Knobs, and 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 "switch setting" or "values" just use the mouse wheel

- Switch setting:        to the right = forward / to the left = backwards
- Value:                increase = forward / decrease = backwards

### 3.5    Saving a certain flight and aircraft state

After installation of SP3 it is now possible to save a complete flight (situation and aircraft state – including all MCDU2 settings) just with one click. Just use the FS-menu function to save the complete flight. It is not necessary anymore to save the aircraft state separately and therefore this MCDU2 menu option has been deleted.

When saving a certain "flight" with "state" and the checklist- / copilot function is set to ON, one checklist must have been completely finished and the next one should be available. This means e.g. you can save a state "ENGINE START" after the "BEFORE PUSHBACK AND START" checklist has been finished. So as a good "point" for saving a flight we recommend are the above mentioned states or BEFORE TAKEOFF, DURING CLIMB, AT CRUISE LEVEL, BEFORE T/D, BEFORE TRANS ALT or BEFORE 10.000 feet (which one ever comes first). But also make sure that a certain FMA state is completely reached e. g. the FMA displays not ALT* anymore but just ALT.

The saved flight can be loaded only from within FSX (not possible from the Free Flight Menu) whereas in Prepar3D you can already use the Training Scenario Setup to load the saved flight.

After the flight has been completely loaded (takes some time based on your system) just move the thrust levers into the right position. On the INFOBAR the following message p. e. during CLIMB will be displayed:

Set Thrust Levers Into CLIMB Position and Wait

This means on the FMA: THR CLB, SPEED or THR IDLE should be displayed after adjusting the thrust levers..

Saved flights can be completely deleted using the FS-option. But this is only valid for those files which are saved in User\Own Documents\Flight Simulator X Files or \Prepar3D v2 Files. The MCDU settings file which is automatically saved in User\Own Documents\Aerosoft\Airbus has to be manually deleted.

## 3.6    Saving flight plans

The Aerosoft Airbus A318/319/320/321 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 LOWILFMN01. The save will be confirmed (folder: C:\User\Your Name\Own Documents\Aerosoft\ Airbus\FlightPlans).

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). The other way is (if you do not know the exact name) just enter the departure / destination airport (like LOWI/LFMN with LSK1R) and on the next page all saved company routes for this departure / destination airport are displayed. Using the respective LSK?L you can select the wanted route.

But if you prefer to save your company routes with runways and SID/STAR as well as TRANS use the
- Aerosoft. AirbusX.A318_19.Configurator (FSX Main Folder\Aerosoft\Airbus A318_A319)
- AirbusX.A320_21.Configurator (FSX Main Folder\Aerosoft\Airbus A320_A321)

to make you preferred settings.

## 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 these sounds just click on the respective LSK and the description changes to green = ON.

## 3.8    Tutorial Flight with Aerosoft A319 CFM:

Even that this tutorial flight is originally written for the A319 it can also be used for flights with other models because the layout of all planes is identical. Only certain data like fuel and payload as well as performance and speed data may vary.

The flight goes from Innsbruck/Austria (ID: LOWI) to Nice/France (ID: LFMN) and the following original flight plan will be used:

 LOWI – **INN UM726 BZO UM984 EVANO UZ185 BORDI** – LFMN
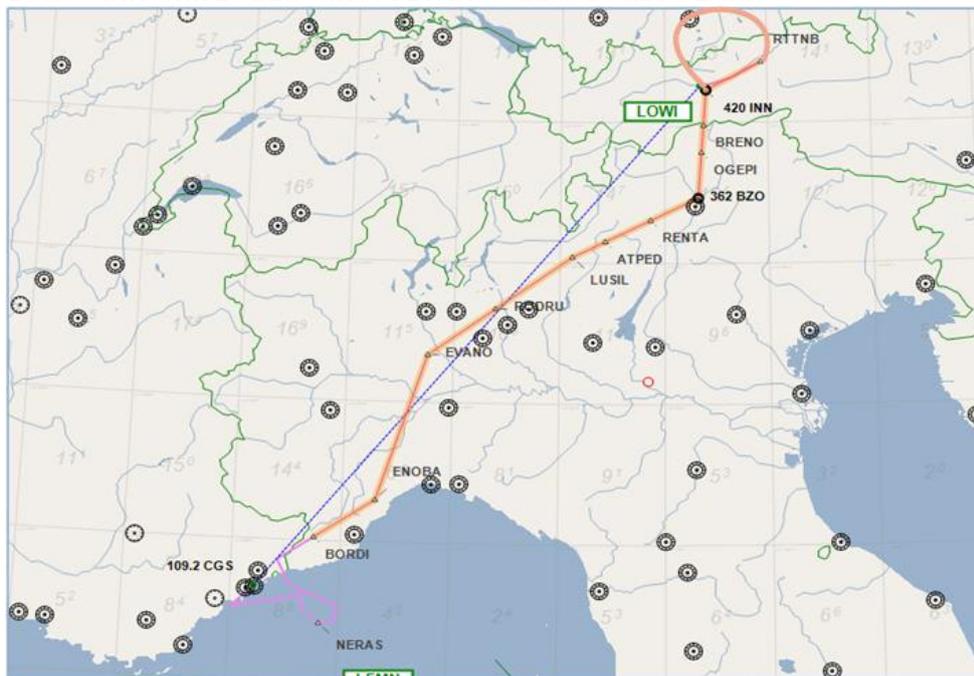


**Picture 22: Flightpath Innsbruck (LOWI) to Nice (LFMN)**

It is a "real" one also used by commercial airlines. The terminology of the above flight plan is as follows: We are flying from Innsbruck (LOWI) to the first waypoint INN and then using the airway UM726 until the waypoint BZO. From there we are using the airway UM984 to EVANO and then the airway UZ185 to BORDI. From BORDI we are then flying to NICE (LFMN).

If you want to use such as the aforementioned "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 (INN) from Innsbruck (LOWI) we have to use a SID = RTT2J (Standard Instrument Departure). 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 Nice (LFMN). There are various STARs (Standard Arrival Routes) as well as TRANS (Transitions) from the last STAR waypoint to the Final Approach Point - FAP in case of an ILS,  or to the Final Approach Fix - FAF, in case of a Non Precision Approach available. FAP/FAF is the point where the instrument approach begins which is NI122 in this tutorial. The selection of the STAR / TRANS or VIA depends on the last waypoint of the flight plan (BORDI) and the landing runway (STAR = BORD6C and TRANS = NERAS).

How to enter this flightplan into the MCDU is explained in chapter 0. There are tools like FS Commander, EFB or PFPX available which you can use to prepare a flightplan and those tools also offer an export function of flightplans to the Aerosoft Airbus A 318/319. But currently only flightplans created with FS Commander and EFB are exported including runways, SID, STAR and TRANS/VIA. Those tools fully support the Aerosoft Airbus A318/319/320/321 flightplan functionality.

## 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_Fallback\Aerosoft.AirbusX.FuelPlanner.exe. Please start the Fuel- and Payload-Planner and it will open in "Simple Mode". The following assumptions are used in "Simple Mode":

- FL: 380
- Taxi time: 20 min
- APU time: 20 min
- Alt dist: 200 nm
- Holding time: 20 min
- Contingency time: 30 min

and no wind or temperature factor. If any of these values differs a considerable amount from your planned flight, then "Advanced Mode" should be used to alter the value. Because we will use for our tutorial flight a FL of 31.000 please change to the "Advanced Mode".

- Set the "UNIT" = **Kg**
- Please select in "Aircraft Type" = **A319**
- Set the passenger load to app. 80 Pax
- Set the cargo load to app. 2.000 kg
- Enter LOWI for "departure" and LFMN for "arrival"



Picture 23: Airbus A318/319/320/321 Fuel Planner (advanced planning mode)

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

If "Auto load with aircraft" is ticked and "Generate Loadsheet" is pushed afterwards those settings automatically will be loaded to the A318/319/320 or 321 if the plane itself is loaded in FSX. But if you want to do the loading manually by yourself, then just untick "Autoload with aircraft" and only push "Generate

Loadsheet" (details for this functions please see chapter 4.7). Please also note that there might be small differences between the values the "Fuel- and Payload-Planner" and FSX is stating after loading.

| A319: | | A320: | |
| --- | --- | --- | --- |
| Empty weight | 39.725 kg | Empty weight | 41.243 kg |
| Payload | 8.921 kg | Payload | 8.921 kg |
| **Zero Fuel Weight** | **48.646 kg** | **Zero Fuel Weight** | **50.164 kg** |
| Fuel | 6.862 kg | Fuel | 7.615 kg |
| **Gross Weight** | **55.508 kg** | **Gross Weight** | **57.779 kg** |

**Picture 24: Total weight settings in Load-Manager**

Please use the Aerosoft Airbus A318/319/320/321 Fuel- and Payload Planner only, not FSX to load the aircraft. This is because 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, FLEX and THS, V1, VR and V2) are required. In the original Airbus MCDU those data have to be manually entered by the crew during flight preparation (based on various loading- and calculation sheets). In the Aerosoft Airbus A318/319/320/321 this data is automatically calculated by the MCDU and displayed in the respective fields. Please note that V1, VR and V2 can only be calculated after the takeoff flaps setting is entered into the MCDU.

If you want to use a more "sophisticated" way you have to calculate and manually enter those values yourself. There are various tools available to calculate the takeoff performance data. One is the easy to use freeware tool called TPC written by Roland Wukovits.

## 4.3    MCDU 2 MENU - ACFT STATE – Aircraft State Menu
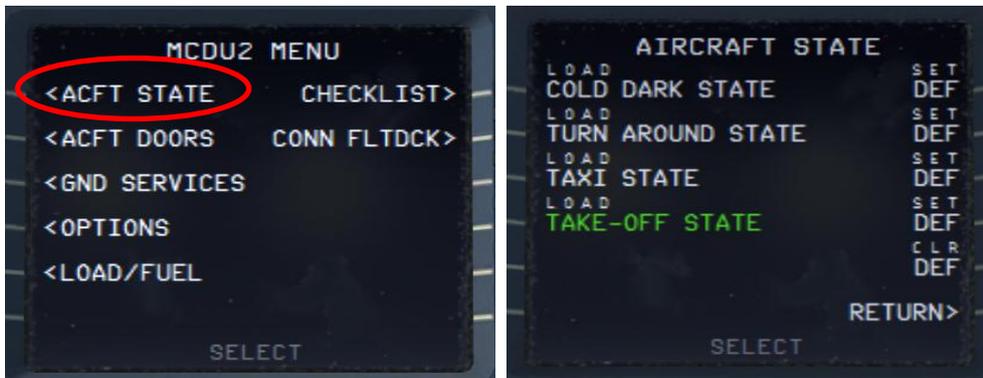


**Picture 25: Aircraft State Menu**

To use the CHECKLIST and the COPILOT function it is necessary to load one of the menu – states. 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 STATE" 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 0)
- Overhead Panel [F12]  switch External Power to ON section 6 (chapter 0)

To power up the various screens (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 Aerosoft Airbus A318/319/320/321 is loaded that it is loaded already in a certain state e.g. if you want the plane always to be loaded as COLD DARK, please use the option DEF (LSK 1R). 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.

If you are loading the TAXI or TAKEOFF states please are aware that the engines are already running with a little bit of thrust i.e. app. 19-22 N1. This might be enough to make the plane already moving slowly. To program the MCDU when TAXI or TAKEOFF is selected, therefore in those states the parking brakes are set. Also using these aircraft states please first program the MCDU and set the Checklist- and Copilot function afterwards to ON.

After Installation of SP3 it is not possible anymore to save / load a defined "USER STATE" (please see chapter 3.5).

## 4.4     ACFT DORS – Aircraft Doors Menu
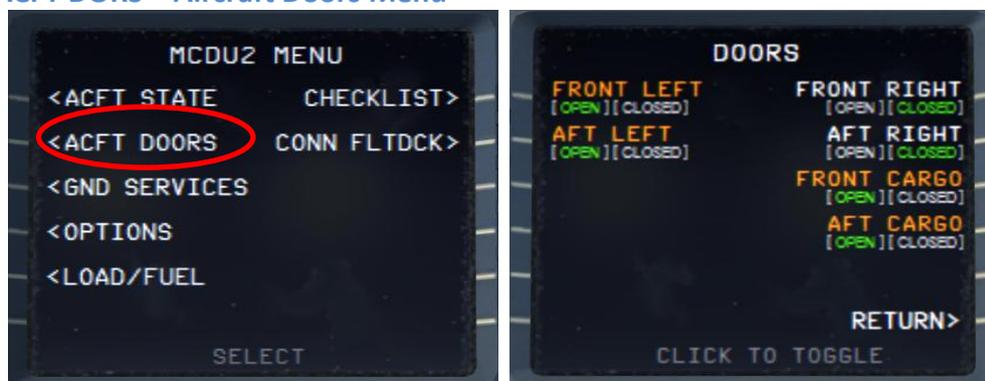


**Picture 26: Aircraft Doors Menu**

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 "red" 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"). If you wish you can open the other doors.

Closing left side passenger doors as well as cargo doors are blocked when pax boarding and cargo loading (MCDU2 LOAD/FUEL menu) is ongoing. Doors can be closed only if pax boarding and cargo loading (MCDU2 LOAD/FUEL menu – PAX/FREIGHT/FUEL = are green).

## 4.5    GROUND SERVICES – Ground Services Menu
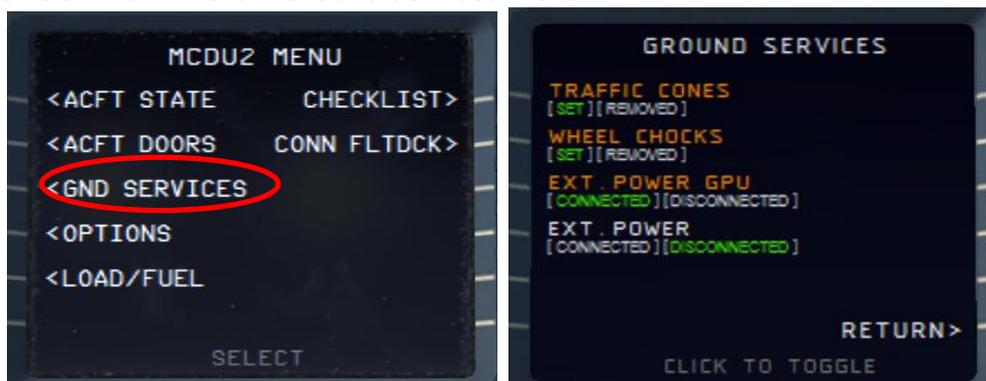


**Picture 27: Ground Services**

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 "COLD DARK"). You may select the other options as you wish.

## 4.6    OPTIONS – Options Menu
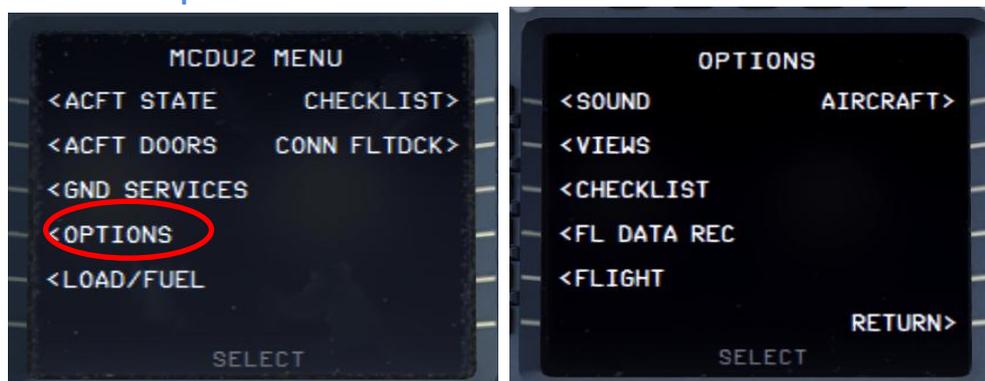


**Picture 28: Options Menu**

### 4.6.1 OPTIONS - SOUND



Picture 29: Sounds Configuration Menu

**CABIN CREW**

Background sounds by the 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"
- "RETARD" – on autoland = at 10 ft RA (sequence "20" "RETARD" "5") and on manual landing at 20 ft RA (sequence "RETARD" "10" "5")
- "100 Above" (100 feet above DH)

**VOLUME**
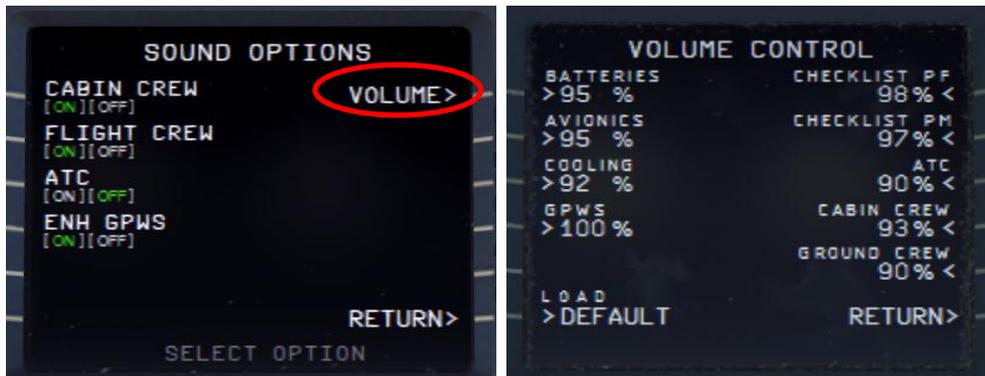


Picture 30: Volume Configuration Menu

Various sound volumes can be adjusted as required. Just enter the required value into the scratchpad and push the appropriate LSK. To set all values back to the original values please use "DEFAULT".

## 4.6.2  OPTIONS - VIEWS



Picture 31: 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 A318/319/320/321. 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 (nights views are automatically used depending on FSX "current time" setting).

**VIEW MODE = VC** (Virtual Cockpit Views)

16 views with pictures (day and night versions)



Picture 32: 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 33: 2D Panel Bar (day and night version)**

The 2D-mode bar can be closed or opened again by clicking on the "grey" triangle on the left of 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
**Picture 34: Vertical Panel Bar**



HORIZONTAL
**Picture 35: Horizontal 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 36: Wing View Bar**

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

### SIM VER (FS-Simulator Version used)
Because in P3D the MENU BAR is not as transparent as in FSX in P3D the INFOBAR is displayed below the MENU BAR. So if you use P3D please change the settings here.

## 4.6.3   OPTIONS - CHECKLIST



Picture 37: Checklists Configuration Menu

**CHECKLIST**

Also an automatic checklist (with sound) is included in this Airbus A318/319/320/321 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 **Fehler! Verweisquelle konnte nicht gefunden werden.**. etc. (marked in "green").

But before setting the status to ON an original Aerosoft Airbus A318/319/320/321 panel or 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". This is also valid for saved user states if those are saved after a checklist has been finished.

If a checklist item is constantly repeated it means that the Airbus item setting is not correct and cannot be handled by the copilot (if this function 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 function so please set it to ON (= green)**

**COPILOT**

If the automatic checklist function is set to ON a copilot function (handling all actions performed by the PM – PILOT MONITORING) 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". It also can be switched ON and OFF using "2" from the keyboard – but not if the ACFT DOORS MENU page is active.

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. In this case the Copilot just reads the checklist items and waits until the correct settings are made - before passing on to the next item. If settings are not made or are not correct the item is constantly repeated. Certain items can also be skipped by using the SKIP ITEM function (see chapter 4.8).
- If the combination is chosen then the "Copilot" works timely aligned with the checklist i.e. performs his duties when the task should be done according to the checklist. Only certain items have to be handled manually by the user (in the checklist marked in "red").

The detailed tasks performed by the Copilot you will find in chapter **Fehler! Verweisquelle konnte nicht gefunden werden.**. etc. (marked in "yellow").

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

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

MCDU: START CHECKLIST OR USE KEY '1'

Picture 38: Info bar

This information appears after you loaded the ACFT STATE "COLD DARK" and the checklist- as well as the copilot function 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 menu or just press [1} on your PC-keyboard.

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 function for our tutorial flight you should set the INFOBAR to ON (= green).**

### HOTKEY

For certain selections or commands of the checklist- and copilot function we use the "1" and "2" from the keyboard. E.g. you can start the "Cockpit Preparation" checklist just using "1" instead of starting it from the right MCDU. But for certain other programs this might be a problem because those keys are already used for other function. If you are running such programs like EZDOC then please set the function to OFF. In this case if you want to start a checklist you always have to start it from the checklist menu.

### AES/GSX PUSH

AES or GSX are separate programs and are not included in the Aerosoft Airbus package e. g. they have to be bought separately. If those programs are not installed then set the option to NO.

The Aerosoft Airbus A318/319/320/321 does not automatically detect an airport where AES can be used. If the AES / GSX pushback function should be used it is necessary to set this function to YES. Then during pushback the conversation between PF (pilot flying) and Ground is aligned, the AES / GSX pushback function will be used as well as the checklist and copilot function to start the engines.

If only the AES / GSX clearance procedure but no pushback shall be used, leave this function to NO. Then after the AES / GSX procedure has been finished the checklist "ENGINE START [2]" has to be used and started.

### 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 function 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 39: 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 this 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.
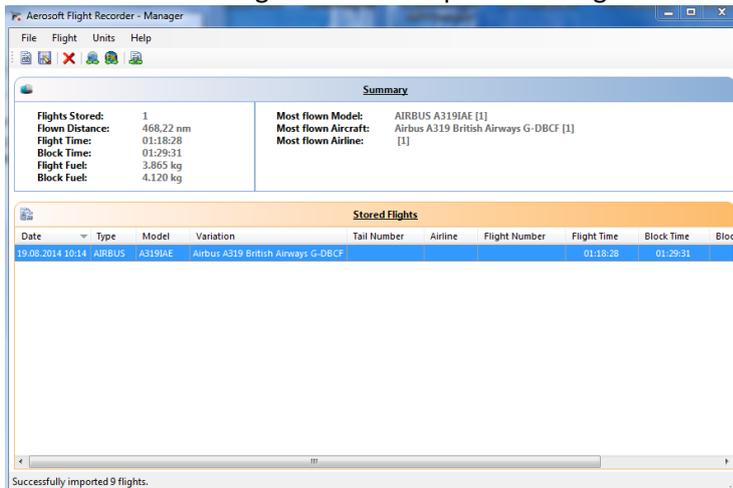


**Picture 40: Flight Data Recorder Menu**

**Picture 41: 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 below )



**Picture 42: Flight Data Recorder – Result in Google Earth –**

## 4.6.5   OPTIONS – FLIGHT
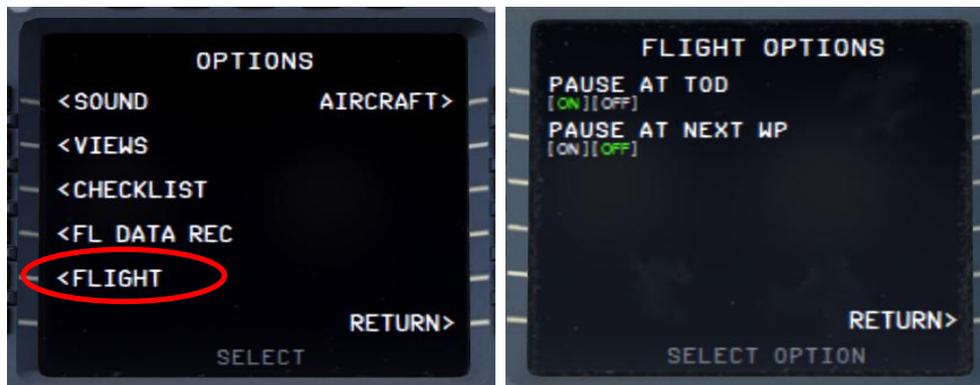


**Picture 43: Flight Options**

**PAUSE AT ……**

Using this menu it is possible to switch ON and OFF 2 different options to pause the FSX during a flight

- PAUSE AT T/D (app. 20 miles before T/D so that the DESCENT PREPARATION checklist can be completed before the descent really starts). FMA mode must be ALT CRZ or ALT CSTR
- At next waypoint

### 4.6.6 OPTIONS – AIRCRAFT
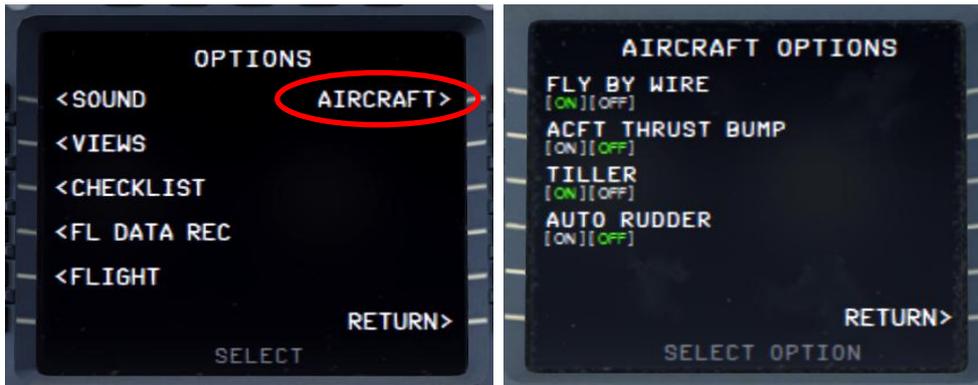


**Picture 44: Aircraft Options**

**FLY BY WIRE ……**
Using this menu option it is possible to switch ON and OFF the "FLY BY WIRE" function – OFF maybe necessary for certain video recordings.

**ACFT THRUST BUMP**
This menu option (set to ON) enables an "unrealistic feature" where users can get additional thrust for takeoff p. e. for "high" airports, at hot temperatures or short runways.

**TILLER**
The Tiller option allows you to de-activate the use of a standard Throttle 3 axis to control the tiller. On some machines this axis is not available or already in use then set this option to OFF.

**AUTO RUDDER**
Setting Auto rudder in your FSX settings to ON you also need to set this in the right MCDU to ON. It disables the Airbus A318/319/320/321 fly by wire function on the ground. This makes steering the Airbus A318/319/320/321 on the ground possible without using rudder pedals or a joystick with a rudder.

If this function here is set to ON then there will be no "rudder check" during the "After Engine Start" checklist.

### 4.7 Load / Fuel



**Picture 45: Load/Fuel Options**

Conditions to use these functions (except LOAD INSTANT) are:
- All Load Requests: Engines = off and parking brakes or chocks are set
- Pax boarding: Front or aft door is open
- Cargo: Both cargo doors are open

**Init Loadsheet**

Please push LSK6L and the data from the Fuelplanner Loadsheet (see chapter 4.1 for details) are automatically loaded into the menu – **but not into the plane** (details you will find in the following paragraph "Load Process"). But it is also possible to enter the data for PAX, CARGO and FUEL manually (within the limits according to the model used –) please see table below:

|  |  | A318 | A319 | A320 | A321 |
|---|---|---|---|---|---|
| Max. Passengers (Standard) | No. | 107 | 124 | 150 | 186 |
| Max. Passengers (Special) | No. | 132 | 156 | 180 | 220 |
| Max. Cargo Weight | KG | 17.00 | 17.00 | 17.00 | 17.00 |
| Max. Fuel Weight | KG | 19.15 | 19.15 | 19.15 | 19.15 |
| Empty Weight | KG | 39.50 | 40.80 | 41.24 | 46.85 |
| **Max. TOW** | **KG** | **68.00** | **75.50** | **77.40** | **89.00** |

If using the special seat configuration the pax weight should be adjusted accordingly. The defined weight per passenger can be changed (SETUP = LSK5R) only in case of manual input. If the Fuelplanner Loadsheet data are used the weight is fixed with 84 kg/pax.

**Picture 46: Load/Fuel Menu after INIT LOADSHEET**

**Load Process**

If the loading process can be started the respective item is marked in "orange". There are two ways to load pax, cargo and fuel to the plane. INSTANT = Just push LSK4R and pax, cargo and fuel are immediately loaded whereas using LSK1-3R the loading process takes some time like in the real world. The loading progress can be checked by looking at the ACT values. During the loading process the respective items are flashing in "green" and if loading is completed the flashing stops.

Using the TAXI or TAKEOFF aircraft state it is only possible to use LOAD INSTANT (if the parking brakes are set). But for the 319 IAE also using LOAD INSTANT it is not possible to "load" fuel (due to FF custom fuel flow simulation) if engines are running.
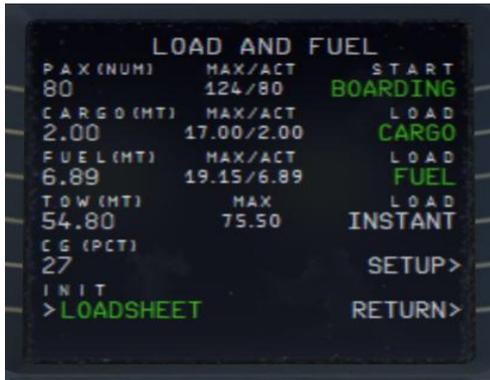
Picture 47: Load/Fuel Menu after loading completed

## 4.8 Checklist

The following Checklist Menu can be accessed via **right** MCDU – MCDU2 MENU.
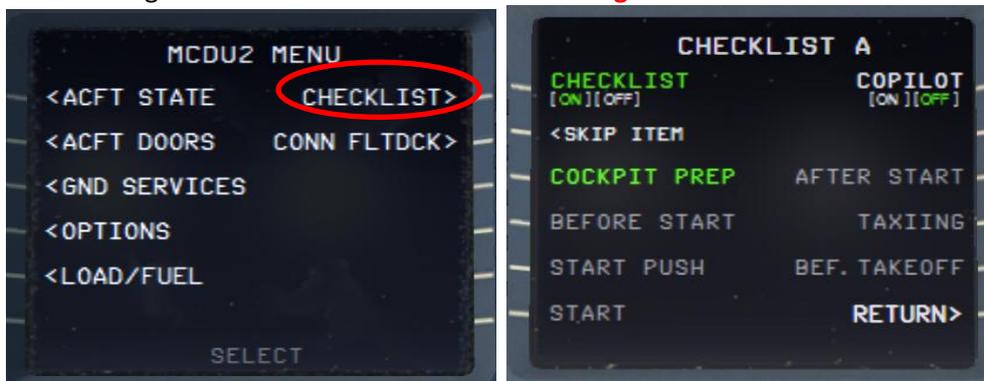

Picture 48: Checklists Menu (page A)

This menu shows all available checklists and contains the following function:

- The COCKPIT PREP checklist should be started (if blinking in orange) by clicking on the respective line selection key = LSK3L. If it is marked in green (as on the picture above) it means it is already active.
- Additionally a solution to skip a checklist item (if the copilot is not used) has been implemented (MCDU CHECKLIST PAGE A LSK2L). The "white" message "SKIP ITEM" appears in future if there is a user action necessary. If you do not know what to do or how to handle the item and you want to skip this checklist item please just press LSK2L and the checklist jumps to the next item. But this facility is not available during the APPROACH CL for flaps setting as well as during the complete FINAL CL because it would make no sense.
- Normally a call = checklist item is repeated various times until the right settings are made by the user. But for "Barometric Check", "Go-around-Altitude" and "Landing Memo" the call is repeated just three times and then the checklist automatically jumps to the next item.
- 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").

## 4.9    Connected Flight Deck

The following Connected Flight Deck Menu can be accessed via **right** MCDU – MCDU2 MENU.
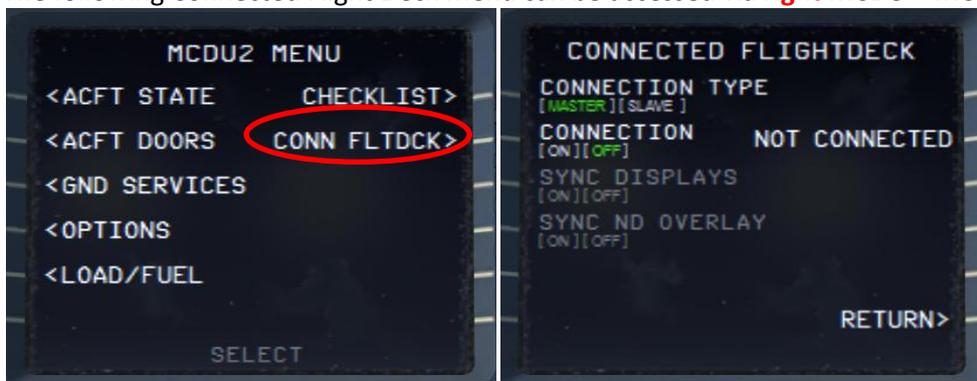


Picture 49: Connected Flight Deck Menu

The feature will make it possible for to people to connect to each other and act as Captain and FO's (Or PF and PM). Details to this feature you will find in Vol 1 in chapter "Connected Flight Deck".

**CONNECTION TYPE**
For the CFD to work, one of the users must be a master and the other a slave. This connection type must be selected before turning connection on. The master has to start to initiate the connection and only there after the slave can initiate his.

**CONNECTION**
Turning on will initiate connection, after turning on, turning it off have no effect.

**SYNC DISPLAYS**
With this option it is possible to synchronize the displays (ND range/mode etc and partially synchronized altimeters) but with certain limitations.

**SYNC ND OVERLAYS**
With this option it is possible to synchronize terrain on ND and the weather radar panel, but not to synchronize the weather itself.

## 4.10   Voice packs for PF and PM

For the checklists there are various voice packs for the Pilot Flying as well as the Pilot Monitoring available (Standard, British, French, German and US). Those voice packs you want to use for your flight can be selected

using the Aerosoft Airbus A318/319/320/321 Configurator. More information on this you will find in the Vol1 InFSX document.

## 4.11    Saving all MCDU 2 settings

All in the MCDU2 made settings (except the use of the CHECKLIST- and the COPILOT-function) are saved e. g. next time an Aerosoft Airbus A318/319/320/321 is loaded again you will start with all the settings from the previous flight.

## 4.12    RAAS – Runway Awareness and Advisory System

Please see Vol 1 – InFSX EN (page 8) for details on this system.  To adjust the RAAS settings with your FSX scenery settings we recommend using Peter Dawson "MakeRwys.exe".

## 5. Tutorial Flight / Checklist and Procedures:

### 5.1 Basic Information - Setup

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

During the tutorial flight we are using the Aerosoft A318/319/320/321 procedure- and checklist which is based on an original from Airbus. This list consists of a "running number" to identify 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 light 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 "COLD DARK". After switching the batteries 1 +2 to ON it should look like in Picture 82. If there are still some lights ON switch off all those lights on the Overhead Panel. Another option (which is necessary to use the Checklist- and Copilot function) 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 "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 0)
- Overhead Panel [F12]  switch External Power to ON section 6 (chapter 0)

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" function 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 (PM) function please see chapter 4.6 for details.

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

| | | | | | |
|---|---|---|---|---|---|
| Detailed description available – please see below - | | | | | |
| | | Not supported by "Checklist" or "Copilot" function | | | |
| 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)

| BASIC PREPARATION PROCEDURE | | | | | |
|---|---|---|---|---|---|
| NO. | PANEL | | | ACTION | | REMARK |

| NO. | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | REMARK |
|---|---|---|---|---|---|---|
| 1 | FUEL PLANNER | ADV. METH. | | PAX-, CARGO- and FUEL LOAD | SET and GEN. LOADSHEET | Please see chapter 4.1 for details |
| 2 | MCDU R | MAIN MENU | ACFT STATE | COLD DARK = 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 |
| 16 | MCDU R | LOAD/FUEL | | INIT LOADSHEET or manually enter data | | |
| 16 | MCDU R | LOAD/FUEL | | LOAD to PLANE | | LOAD INSTANT or separately |

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

16. **Load to Plane:** Conditions to use these functions (except LOAD INSTANT) are:
   - All Load Requests: Engines = off and parking brakes or chocks are set
   - Pax boarding: Front or aft door is open
   - Cargo: Both cargo doors are open

   For details please see chapter 4.7

## 5.3 Cockpit Preparation

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | TA | |
| 17 | MCDU | MAIN MENU | CHECKLIST | A = PUSH LSK3L | PUSH | | Start Checklist / Co-Pilot - if selected |
| 18 | OVERHEAD | ELEC | 3 | BAT 1 + 2 (Batteries) | CHECK ON (BOTH) | Cop | |
| 19 | OVERHEAD | ELEC | 6 | EXT PWR (External Power) | ON | CoP | (if available – see MCDU MENU / DOORS) |
| 20 | OVERHEAD | EXT. LIGHTS | 9 | NAV. LIGHTS | CHECK ON | CoP | |
| 21 | PEDESTAL | ENG | 5 | ENG MASTER 1 + 2 | CHECK OFF | CoP | TA | |
| 22 | PEDESTAL | ENG | 5 | ENG MODE SEL | CHECK NORM | CoP | TA | |
| 23 | ECAM | LAND GEAR | 2 | LANDING GEAR LEVER | CHECK DOWN | CoP | |
| 24 | PEDESTAL | P. BRAKE | 7 | PARKING BRAKE | CHECKED = OFF | CoP | TA | |
| 25 | PEDESTAL | FLAPS | 8 | FLAPS LEVER | CHECK POSITION = 0 | CoP | |
| 26 | PEDESTAL | SP. BRAKE | 6 | SPEED BREAK LEVER | CHECK RETR. / DISARMED | CoP | |
| 27 | PEDESTAL | THR LEVER | 4 | THRUST LEVERS | CHECK IDLE | | TA | |
| 28 | PEDESTAL | RADIO | 1 | TRANSPONDER MODE | CHECKED STANDBY | | |
| 29 | PEDESTAL | RADIO | 1 | RADIO CONTROL PANEL | ON | CoP | |
| 30 | ECAM | ECAM | 5 | ECAM RECALL (RCL) BUTTON | PRESS | CoP | TA | |
| 31 | MAIN PANEL | ANTI SKID | 10 | ANTI SKID | CHECK ON | CoP | TA | |
| 32 | MAIN PANEL | EFIS | 3 | FLIGHT DIRECTOR | CHECK ON | CoP | |
| 33 | OVERHEAD | SIGNS | 12 | EMERGENCY LIGHTS | ARM | CoP | TA | |
| 34 | OVERHEAD | SIGNS | 12 | NO SMOKING SIGNS | ON | CoP | TA | |
| 35 | OVERHEAD | SIGNS | 8 | WING & ENGINE ANTI ICE | CHECK OFF | Cop | |
| 36 | OVERHEAD | PR.WI. HEAT | 13 | PROBE WINDOW HEAT | AUTO/OFF | | |
| 37 | OVERHEAD | AIR COND. | 7 | HOTAIR, ENG. BLEED L+R, PACKS L+R | CHECK ON | Cop | TA | (no white signs) |
| 38 | OVERHEAD | VENTILATION | 14 | BLOWER, EXTRACT, CAB. FANS | CHECK ON | | TA | (no white signs – INOP not animated) |
| 39 | OVERHEAD | ELECTRIC | 5 | ENG. GENERATOR L+R | CHECK ON = FAULT | Cop | |
| 40 | OVERHEAD | ELETRIC | 5 | APU GENERATOR | CHECK ON | | (only if EXT. POWER is ON) |
| 41 | OVERHEAD | FUEL | 2 | ALL FUEL PUMPS | PRESS | CoP | TA | OFF should disappear |
| 42 | OVERHEAD | FUEL | 2 | ALL FUEL PUMPS = ON | CHECK | | |
| 43 | OVERHEAD | HYDRAULICS | 1 | ACCU BREAK PRESS: ELEC. PUMP | (ON) | | See explanation |
| 44 | OVERHEAD | GPWS | 15 | GPWS: ALL SWITCHES | CHECK ON | Cop | (no white signs) |
| 45 | OVERHEAD | EFCS | 16 | EFCS: ALL SWITCHES | CHECK ON | Cop | (no white signs) |
| 46 | OVERHEAD | ADIRS | 17 | ADIRS (3x) | ON | CoP | TA | |
| 47 | COCKPIT | EM.EQUIPMENT | | ALL EQUIPEMT AVAILABLE AND OK | CHECK ON | | Checklist complete |
| 48 | PEDESTAL | RADIO | 1 | SET FREQUENCIES | SET | | If ATC is used |
| 49 | PEDESTAL | RADIO | 1 | ATC CLEARANCE | OBTAIN | | If ATC is used |

In the Cockpit Preparation CL after a Turnaround only the "blue" marked actions / procedures (TA) are used.

17. **Start Checklist:** Alternatively you can also use "1" from the keyboard to start the checklist.

41. **Fuel Pumps:** If **no** external power is used – in our tutorial we use external power # 19 - 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.

43. **HYDR. PUMPS:** Only if accumulator pressure is below 500 PSI. The indication of the brake pressure normally remains at zero.

46. **ADIRS:** All three switches have to be set to NAV
48. **RADIO – SET FREQUENCIES –** As the ATIS frequency for Innsbruck is 126.020 set the VHF1 frequency in STBY/CRS to 126.025 (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 GSX:** The loaded "COLD DARK" aircraft state is with parking brakes = OFF and chocks = SET (parking brakes are normally OFF to cool down the brakes). AES since version 2.26 recognizes "chocks = SET" and does not require "parking brakes = ON" anymore. Open the AES window (CTRL+SHIFT+W) or GSX (CRTL+F12) In AES just select the option "F5 – Request Boarding now" or in GSX " 4 – Request Boarding".

## 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 | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **PANEL** | | | **ACTION** | | | **REMARK** |
| **NO.** | TYP | PART (Name) | PART (No.) | **PF (PILOT FLYING)** | **PM (PILOT MONITORING)** | | |
| 50 | MCDU | INIT 1 | | DEP and DEST AIRPORT | **ENTER** | | LOWI/LFMN |
| 51 | MCDU | INIT 1 | | ALIGN IRS | **PRESS** | | |
| 52 | MCDU | INIT 1 | | FLT NBR (Flight Number) | **ENTER** | | Par example =LH319 |
| 53 | MCDU | INIT 1 | | COST INDEX | **ENTER** | | 30 |
| 54 | MCDU | INIT 1 | | CRZ FL (Cruise Flight Level) | **ENTER** | | =310 (31.000 feet) |
| 55 | MCDU | F-PLAN | | FLIGHTPLAN | **ENTER** | | |
| 56 | MCDU | RAD NAV | | ENTER ADF1 FREQUENCY | **ENTER** | | RTT |
| 57 | MCDU | INIT 2 | | BLOCK | **ENTER** | | 6.8 |
| 58 | MCDU | INIT 2 | | ZFWCG/ZFW | CHECK | | 25.0/49.5 – speeds and altitude are calculated |
| 59 | MCDU | PERF-TO | | FLAPS / THS | **ENTER** | | 2/ |
| 60 | MCDU | PERF-TO | | FLEX TO TEMP | CHECK | | |
| 61 | MCDU | PERF-TO | | V1, VR and V2 | CHECK | | 89/120/124 |
| 62 | MCDU | PERF-CLIMB | | DATA | CHECK | | |
| 63 | MCDU | PERF-CZR | | DATA | CHECK | | |
| 64 | MCDU | PERF-DES/APPR | | DATA | CHECK | | |
| 65 | MCDU | PERF-GO ARD | | DATA | CHECK | | |

Open the MCDU. If 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.

50. **FROM/TO:** Enter **LOWI/LFMN** into the scratchpad and then press LSK1R. You will see that another page automatically opens displaying the available company routes (LOWILFMN01). As we want to get acquainted entering a flightplan ourselves we will not use this function. So just press the respective LSK for RETURN.
XX. **ALTN:** Enter LFML as an alternative airport for Nice.
51. **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 Nice to an alternative airport for it. Please see chapter 1and 0 for details on this function.
52. **FLT NBR:** Please enter the flight number using the MCDU keyboard – in our case DLH319 (for Lufthansa)

– into the scratchpad and then use LSK 3L to cut and paste the data into the field FLT NBR.

53. **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 30 and then use LSK 5L to cut and past the value into the field COST INDEX. The cost index for fuel and maintenance of 30 is a low time cost and medium fuel cost value (please see table below).

**Table 2. A319/A321 cost index**

(kg/min)

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

**Picture 50: Table Cost Index**

54. **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.

55. **F-PLAN:** We will use the flight plan as explained in chapter 3.9 (LOWI – **INN UM726 BZO UM984 EVANO UZ185 BORDI** – LFMN). Please use the F-PLAN button of the left MCDU to change to the F-PLAN page.
   - Push LSK1L (next to LOWI)
   - Push LSK1L (next to DEPARTURE)
   - Select takeoff runway: In our case we will use 08
   - Select SID = RTT2J 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 RTT and push the respective LSK L next to RTT
   - Enter INN into the scratchpad and push the respective LSK 3R next to NEXT WPT
   - Select INN = LSK1L
   - Browse (using the button with arrow showing up or down) to INN and push the respective LSK L next to INN
   - Select AIRWAYS = LSK5R
   - Enter UM726 into the scratchpad and push LSK1L
   - Enter BZO into the scratchpad and push LSK1R
   - Enter UM984 into the scratchpad and push LSK2L
   - Enter EVANO into the scratchpad and push LSK2R
   - Enter UZ185 into the scratchpad and push LSK3L
   - Enter BORDI into the scratchpad and push LSK3R
   - Insert flightplan into temporary flightplan = LSK6R
   - Browse (using the button with the arrow showing up) until you see BORDI and F-PLAN DISCONTINUITY
   - Push the CLR button – CLR will appear on the scratchpad
   - Push the respective LSK L to F-PLAN DICONTINUITY (and it will be cleared)
   - Select LFMN = Push LSK6L
   - Select ARRIVAL = Push LSK1R
   - Select landing runway: In our case we will use ILS04L. Browse (using the button with arrow showing up) to ILS04L
   - Select STAR = BORD6C by browsing  (use the button with arrow showing up) and push the respective LSK L)
   - Select VIA (LSK2L) = NERAS (LSK4L)
   - 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)<br>to next WP | Actual<br>SPEED | Actual<br>ALT. (FT) | CSTR |
|---|---|---|---|---|---|---|---|
| 1 | LOWI08 | INNSBRUCK | C079° | 5 | 124 | 1.900 | |
| 2 | INTCPT | | C066° | 2 | 250 | 5.700 | |
| 3 | AB | ABSAMS | RTT2J | 4 | 250 | 7.600 | |
| 4 | (LIM) | | | 1 | 250 | 10.000 | |
| 5 | DOEJ | | RTT2J | 6 | 250 | 10.800 | **+4.800 feet** |
| 6 | OEJ07 | | RTT2J | 4 | 294 | 13.500 | **+6.700 feet** |
| 7 | 9500 | | RTT2J | 5 | 294 | 17.300 | **+9.500 feet** |
| 8 | RTT | RATTENBURG | RTT2J | 25 | 294 | 17.300 | |
| 9 | INN | INNSBRUCK | UM726 | 15 | 294 | 31.000 | |
| 10 | T/C | | UM726 | 0 | 294 | 31.000 | |
| 11 | BRENO | BRENNER | UM726 | 12 | 294 | 31.000 | |
| 12 | OGEPI | | UM726 | 20 | 294 | 31.000 | |
| 13 | BZO | BOLZANO | UM726 | 21 | 294 | 31.000 | |
| 14 | RENTA | | UM984 | 20 | 294 | 31.000 | |
| 15 | ATPED | | UM984 | 15 | 294 | 31.000 | |
| 16 | LUSIL | | UM984 | 38 | 294 | 31.000 | |
| 17 | RODRU | | UM984 | 33 | 294 | 31.000 | |
| 18 | EVANO | | UM984 | 65 | 294 | 31.000 | |
| 19 | ENOBA | | UZ185 | 21 | 294 | 31.000 | |
| 20 | T/D | | UZ185 | 8 | 294 | 31.000 | |
| 21 | BORDI | | BORDI237° | 17 | 294 | 28.800 | |
| 22 | NIZ/09 | | C143° | 12 | 294 | 21.500 | |
| 23 | MIKRU | | BORD6C | 21 | 294 | 16.600 | |
| 24 | PIRAM | | BORD6C | 1 | 250 | 9.100 | |
| 25 | INTCPT | | C112° | 7 | 250 | 8.800 | |
| 26 | AZR35 | | 35AZR | 4 | 250 | 6.200 | |
| 27 | NERAS | | NERAS | 4 | 250 | 4.000 | **4.000 feet** |
| 28 | AZR26 | | NERAS | 2 | 250 | 4.000 | |
| 29 | INTCPT | | C298° | 35 | 250 | 4.000 | |
| 30 | (DECEL) | | | 3 | 200 | 4.000 | |
| 31 | NIZ27 | | 27NIZ | 4 | 179 | 4.000 | **200 knots** |
| 32 | NI17 | | C043° | 5 | 179 | 4.000 | |
| 33 | NI122 | | NERAS | 4 | 179 | 4.000 | **4.000 feet** |
| 34 | NI77 | | | 3 | 141 | 2.500 | **2.500 feet** |
| 35 | NI51 | | | 5 | 134 | 1.600 | **1.600 feet** |
| 36 | LFMN04L | | | | | 0 | |
| | | Total : | | 448 NM | | | |

**Picture 51: Detailed Flight Plan LOWI – LFMN**

Waypoints like 4 (LIM), 10 (T/C), 20 (T/D), 25 (INTCPT) and 30 (DECEL) are at this stage not yet calculated by the MCDU – will be inserted automatically after the MCDU programming is complete.
The waypoints after #36 LFMN04L 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 LOWI, complete route and arrival airport LFMN (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 LOWILFMN01 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.

56. **RAD NAV:** Optional and not necessary because we are using "Managed Mode" for our flight: **E**nter RTT into the scratchpad and then press LSK5L. To activate ADF please go to the 2.1.5 EFIS CONTROL PANEL #7 and set the left switch to ADF.

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)

57. **BLOCK:** Please enter 6.8 in the scratchpad and then press LSK 2R

58. **ZFWCG/ZFW:** ZFWCG and ZFW are automatically calculated and displayed. 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. The relation / calculation between TOW, Centre of Gravity in % of the MAC (mean aerodynamic chord) and THS are content of the Load- and Fuelplanner (Advanced Mode).

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

59. **FLAPS/THS =** Trimmable Horizontal Stabilizer: Please see below a picture showing the relation between

CG and THS.
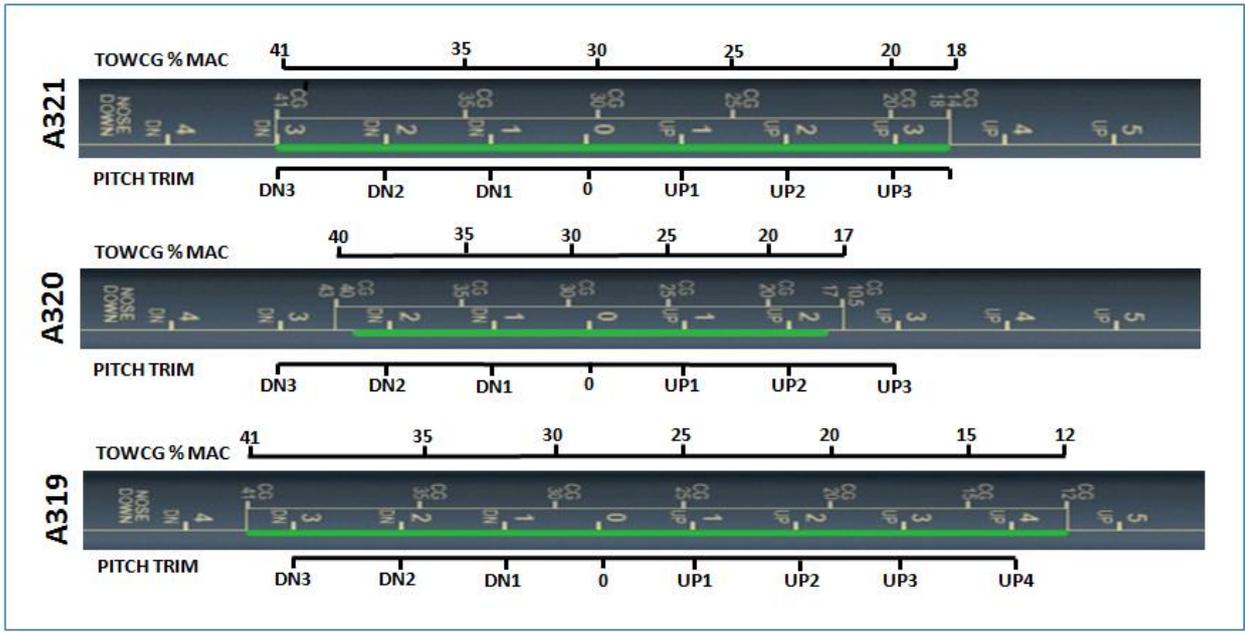


Picture 52: CG (centre of gravity)/ THS

Make the necessary load- and fuel-calculations using the Fuelplanner. For our flight this would be a value of 28 TOW %MAC (also content of the LOADSHEET) and a proposed trim of UP0.1.

As in our case we will use FLAPS 2 for the takeoff please enter "2/UP0.1" into the scratchpad and then press LSK 3R so that the value is cut and pasted into the field FLAPS/THS (if the proposed THS value is 0.0 then please enter /UP0.0). But please remember the input of those values does not mean that at the same time the real flaps- and trim setting are automatically made (only in case the Copilot- function is set to ON). Otherwise you have to set the flaps position and trim manually. The exact trimming value is displayed on the lower ECAM F/CTL page = PITCH TRIM.

60. **FLEX TO:** The value is automatically calculated and displayed based on the selected flaps setting for takeoff. If you want to change the value, just overwrite the content of this field. Because we will use Flaps 2 and the runway at LOWI is quite short no value for FLEX takeoff is automatically calculated e. g. MAN TOGA is proposed.

XX. **ENG OUT ACC:** We leave the engine out / acceleration altitude as proposed by the MCDU (Ground level plus 1500 = 3407 Feet).

61. **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 Innsbruck is 11000 feet - so manually enter this value.

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

| NO. | PANEL | | | ACTION | | REMARK |
|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 66 | EFIS | FD / ILS | 3 | Button: LS | OFF | |
| 67 | EFIS | ND MOD/RGE | 5 & 6 | ND mode and range | SET | Mode: ARC / Range 10 |
| 68 | EFIS | ADF/VOR | 7 | VOR / ADF select | AS REQUIRED | |
| 69 | FCU | ALTITUDE | 3 | First Altitude | SET TO 12.000 Feet | >than THR RED altitude |

| 70 | FCU | FCU | 1 to 4 | DASH-BALL-DASH-BALL-ALT-BALL-DASH | CHECK | | |
|---|---|---|---|---|---|---|---|
| 71 | ECAM | ECAM | 1 | STATUS | CHECK | | |
| 72 | PEDESTAL | RADIO | 1 | ATC - FREQUNCY | SET | | If ATC is used |
| 73 | PEDESTAL | RADIO | 1 | ATC CLEARANCE | OBTAIN | | If ATC is used |
| 74 | GLARESHIELD | ND-DISPL. | 2 | IRS ALIGN | CHECK | | |
| 75 | MCDU | F-PLAN | | F-PLAN PAGE | SET | | |

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

69.  **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 3407 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.

     If you forgot to enter a "First Altitude" or if you started with the TAXI or TAKEOFF aircraft state the copilot (if used) automatically sets the first altitude to 7.000 feet during TAXI or before TAKEOFF.

70.  **FCU-Mode:** Push FCU SPD and HDG knob so that the displays show SPD="---●"
     HDG="---●" ALT=12000●"and "-----" e.g. SPD and HDG are in "managed mode"

**AES**
**GSX:** Open the AES (CTRL+SHIFT+W) or GSX window (CRTL + F12). In AES select the option "F6 – Prepare for Departure" and then select the option "F1 – Yes, I need Pushback please, prepare now, wait for start request" In GSX select: "4 – Prepare for Pushback and Departure".

## 5.6   Before Pushback and Start

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 76 | MCDUw | MAIN MENU | ACFT DOORS | CLOSE ALL DOORS | PUSH | | Start Checklist / Co-Pilot - if selected |
| 77 | MCDU R | MAIN MENU | ACFT DOORS | ALL WINDOWS AND DOORS CLOSED | CHECK | CoP | |
| 78 | OVERHEAD | APU | 10 | APU MASTER and START | ON | CoP | START= available 10 sec after MASTER |
| 79 | OVERHEAD | APU | 10 | APU BLEED = ON | ON | CoP | |
| 80 | MCDU | ELEC | 6 | EXT PWR | OFF | CoP | |
| 81 | OVERHEAD | SIGNS | 12 | SEAT BELT SIGNS / NO SMOKING = ON | ON | CoP | For Seat Belts also AUTO is OK |
| 82 | PEDESTAL | THR LEVER | 4 | LEVERS | CHECK IDLE | | |
| 83 | PEDESTAL | P. BRAKE | 7 | PARKING BRAKE | SET to ON | CoP | FSX: CTRL + . (period) |
| 84 | MCDU2 | MAIN MENU | GND SERV. | TRAFFIC CONES | REMOVE | CoP | |
| 85 | MCDU2 | MAIN MENU | GND SERV. | WHEEL CHOCKS | REMOVE | CoP | |
| 86 | EFIS | AP SETTING | 2 | BARO REF | SET / X CHECK (Read out) | CoP | |
| 87 | OVERHEAD | EXT. LIGHTS | 9 | BEACON | ON | CoP | Checklist complete |

76.  **DOORS / START CL:** Closing left side passenger doors as well as cargo doors are blocked when pax boarding and cargo loading (MCDU2 LOAD/FUEL MENU) is ongoing. Checklist only starts if pax boarding and cargo loading (MCDU2 LOAD/FUEL MENU) is completed = are green.

83.  **PARKING BRAKE:** The parking brakes were OFF when the "COLD DARK" aircraft state was loaded. Now they are set to ON.

84.  **TRAFFIC CONES:** Are automatically removed without call.

85.  **WHEEL CHOCKS:** Are automatically removed without call

86.  **BARO REF:** As we are flying with "Fair Weather" it means that in Innsbruck there will be no surface winds and for takeoff the runway 08 is in use. The air pressure currently is 1013 hPa and we have a temperature of 15 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) or GSX (CRTL+F12). In AES select the option "F2 – Start Pushback now – Nose to Right" or in GSX = 1 – Nose right / Tail left.
     During pushback you can start the engines according to #97 - #101. 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 5.8 .

If no pushback is required then please use the respective AES / GSX function and set the checklist AES / GSX PUSH function (please see 4.6.3) to NO. After AES / GSX has finished its procedure continue and select the "Engine Start w/o Pushback" checklist and start it (5.7.2.). The reason is that AES / GSX are closed programs and we cannot get any information when to start the Engine Start checklist if there is no "moving" aircraft.

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

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 88 | MCDU | MAIN MENU | CHECKLIST | SELECT: "START WITH PUSH" = LSK5L | | | Starts next Checklist / Co-Pilot - if selected |
| 89 | MCDU right | | | SELECT TAXIWAX DIST and PB DIRECTION | SET | | |
| 90 | MCDU right | | | START PUSHBACK | START | | |
| 91 | | | | „Flight Deck to Ground" | | | GROUND: „Go ahead" |
| 92 | | | | „We have ATC clearance" | | | GROUND: „Roger" |
| 93 | | | | „Confirm ground equipment = clear" | | | GROUND: "Clear" |
| 94 | | | | "Starting pushback" | | | GROUND: "Roger" |
| 95 | PEDESTAL | P. BRAKE | 7 | PARKING BRAKE = OFF | SET to OFF | | FSX: . (period) |
| 96 | | | | | | | GROUND: "OK. Starting Pushback" |
| 97 | PEDESTAL | ENGINE | 5 | ENG MODE SEL | IGN START | | |
| 98 | PEDESTAL | ENGINE | 5 | MASTER SW 2 | ON | | |
| 99 | MAIN PANEL | E/WD | 5a | No. 2 RUNNING UP | CHECK | | |
| 100 | PEDESTAL | ENGINE | 5 | MASTER SW 1 | ON | | Engine 2 N1 > 20% |
| 101 | MAIN PANEL | E/WD | 5a | No. 1 RUNNING UP | CHECK | | |
| 102 | | | | When in Position: Stop Pushback | STOP (SHIFT + P) | | |
| 103 | | | | | | | GROUND: „Pushback complete" |
| 104 | PEDESTAL | P. BRAKE | 7 | PARKING BRAKE | ON | | FSX: CRTL +.(period) |
| 105 | | | | | | | GROUND: "Have a good flight" – CL complete |

89. **Taxiway Distance and Pushback Direction:** After the checklist has been started automatically the following right MCDU menu opens



**Picture 53: Pushback Gauge**

Please set the distance to the taxiway (using LSK 3L or LSK 4L) as well as the pushback direction (using LSK 3R or LSK 4R) in our case (S Parking 8 in LOWI) = 9 m and 90 degrees left. To set the correct value you also can use the mouse scroll wheel.

The feature uses the FSX basic pushback function and is it a little bit "enhanced". The FSX function consists of a time part "straight" and the turn part. The minimum time FSX uses / needs for "straight" is app. 7-9m (based on aircraft model used) e. g. time is converted into distance. Additionally to that the distance for the turn itself comes on top - a medium value for a 90° turn is app. 50m. But this distance varies based on angle used and size of the plane e. g. for the A318 it is much smaller than for the A321. But if needed you can always stop the pushback by using SHIFT+P.

90. **Start Pushback:** Push "START" (LSK 6R) and the pushback starts….. There is no need to stop the pushback – it automatically will stop when the previously set position is reached.

93. **Parking Brakes:** Do not touch the parking brakes earlier than asked by the ground service crew! Only then release the brakes.

98. **Engine Start:** After setting the Engine Mode Selector to IGN START  as well setting the Engine Master Switch to ON, 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.

    CFM engines spool up to around N2 24% and then light up and produce an EGT rise. Normally this takes some 15 sec max. But if IAE engines are installed it takes another 15 sec before the engine lights up because IAE implemented an 30 sec "blow through" / dry crank sequence to get rid of any remaining fuel/oil before starting the actual engine start sequence.

99. **Engine stabilized:** The set limits are

101. **CFM**: N1: 18.5 % N2: 64.0% and EGT: 350°C

    **IAE:**  EPR 1.010, N1: 21.0%, N2: 57.0% and EGT: 410°C

102. **Stop Pushback:** To stop the pushback it is not necessary to do anything. The pushback will stop and the defined position (see settings # 89). If needed you can always stop pushback by using SHIFT+P.

### 5.7.2  Engine Start without Pushback

| ENGINE START | | | | | | |
|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 106 | MCDU | MAIN MENU | CHECKLIST | SELECT: "START" = LSK6L | | Starts next Checklist / Co-Pilot -  if selected |
| 107 | | | | „Flight Deck to Ground" | | GROUND: „Go ahead" |
| 108 | | | | „We have ATC clearance" | | GROUND: „Roger" |
| 109 | | | | „Confirm ground equipment = clear" | | GROUND: "Clear" |
| 110 | | | | „Starting engines" | | GROUND: „Roger" |
| 111 | PEDESTAL | ENGINE | 5 | ENG MODE SEL | IGN START | |
| 112 | PEDESTAL | ENGINE | 5 | MASTER SW 2 | ON | |
| 113 | MAIN PANEL | E/WD | 5a | No. 2 RUNNING UP | CHECK | |
| 114 | PEDESTAL | ENGINE | 5 | MASTER SW 1 | ON | Engine 2 N1 > 20% |
| 115 | MAIN PANEL | E/WD | 5a | No. 1 RUNNING UP | CHECK | |
| 116 | | | | "Both Engines running" | | GROUND: „Roger" |
| 117 | | | | | | GROUND: "Have a good flight" – CL complete |

112. **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. The amber crosses will disappear when setting the Engine Mode Selector to IGN/START. Only the N1 and N2 will have amber crosses now which will disappear when you select the Engine Master to one.

    CFM engines spool up to around N" 22% and then light up and produce an EGT rise. But if IAE engines are installed observe the EGT after 30 sec. because IAE implemented an 30 sec "blow through" / dry crank sequence to get rid of any remaining fuel/oil before starting the actual engine start sequence.

## 5.8   After Engine Start

| AFTER ENGINE START | | | | | | |
|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 118 | | | | ENGINE 1 & 2 are running for 15 sec | | Start Checklist / Co-Pilot -  if selected |

| 119 | PEDESTAL | ENGINE | 5 | ENG MODE SEL | NORM | CoP | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 120 | OVERHEAD | APU | 10 | APU BLEED | OFF | CoP | |
| 121 | OVERHEAD | APU | 10 | APU MASTER SW | OFF | CoP | |
| 122 | PEDESTAL | SPEED-BR. | 6 | GROUND SPOILERS | ARM | CoP | Mouse click: right |
| 123 | PEDESTAL | RUDDER | 4 | RUDDER TRIM | SET to 0 degree | CoP | |
| 124 | PEDESTAL | PITCH | 4 | PITCH TRIM | SET to THS Value | | |
| 125 | | | | AILERON, ELEVATOR and RUDDER | CHECK ALL 6 POSITIONS | | |
| 126 | PEDESTAL | FLAPS | 8 | FLAPS | SET to 2 | CoP | FSX: F7 |
| 127 | OVERHEAD | ANTI-ICE | 8 | ENG ANTI ICE (1 &2) | ON / OFF | | |
| 128 | OVERHEAD | ANTI-ICE | 8 | WING ANTI ICE | ON / OFF | | |
| 129 | ECAM | ECAM | 1 | ECAM STATUS | CHECK | | |
| 130 | ECAM | ECAM | 1 | ECAM DOOR PAGE | CHECK | CoP | |
| 131 | | | | HAND SIGNAL RECEIVED | | | Checklist complete |

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

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

125. **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 (only if "AUTORUDDER" i. e. the option in the right MCDU – FLIGHT OPTIONS is not set to ON). Each required position / check is mentioned in the INFOBAR and the various checks are orally confirmed.

129. **ECAM STATUS:** If the CLR button is ON it is necessary previously to confirm a "warning message".

## 5.9 TAXI

| NO. | PANEL | | | ACTION | | | REMARK |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 132 | PEDESTAL | RADIO | 1 | TAXI CLEARENCE | OBTAINED | | If ATC is used |
| 133 | PEDESTAL | P. BRAKE | 7 | PARKING BRAKE | OFF | | FSX: . (period) |
| 134 | | | | GS> 10 Knots | | | Start Checklist / Co-Pilot - if selected |
| 135 | OVERHEAD | EXT. LIGHTS | 9 | NOSE LIGHT | TAXI | CoP | |
| 136 | PEDESTAL | THR LEVER | 4 | LEVERS | AS REQUIRED | | |
| 137 | | | | PRESS BRAKES to listen for PM CALL | PRESS PEDAL / RELEASE | | |
| 138 | MAIN PANEL | AUTO BRAKE | 6 | SET TO | MAX | CoP | |
| 139 | MCDU | | | TAKEOFF DATA | REVIEW | CoP | |
| 140 | FCU | HDG / ALT | 2 & 3 | FCU  HDG/ALT = DASH-BALL-DASH-BALL | SET or CHECK | | IF ALT NOT SET CoP sets it to 7000ft |
| 141 | | | | ALL DISPLAYS ARE ON | CHECK | | |
| 142 | ECAM | PANEL | 5 | TO CONFIG | PRESS | CoP | |
| 143 | MAIN PANEL | E/WD | 5a | TO MEMO | CHECK NO BLUE | CoP | |
| 144 | PEDESTAL | WXR | 11 | SET system to 1 (ON) and knob to WX-T | SET | CoP | Checklist complete |
| 145 | EFIS | FD / ILS | 3 | FD | CHECK ON | | |
| 146 | PEDESTAL | TRANSPOND. | 9 | ATC CODE | CONFIRM / SET | | If ATC is used |

136. **THRUST LEVERS:** Set thrust levers to the manual range. Around 35 % N1 (EWD) should be enough to start the aircraft moving. Then set the thrust levers back to ZERO. Taxiing should be operated at 20 knots, with 10 knots during turns. If you are getting too fast just use the brakes to reduce speed.

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

139. **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.

140. **Altitude:** The FCU ALT target value will be entered by the copilot in visible steps (with sound) and also considering the 100 and 1000 switch.

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

144. **WXR:** Set the main switch to 1 (ON) and the WXR knob to WX-T. More information you will find in chapter 2.1.3.

## 5.10 Before Takeoff

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| **BEFORE TAKEOFF** | | | | | | | |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 147 | | | | INFORMATION TO CABIN CREW | | | "Please prepare for Takeoff" |
| 148 | OVERHEAD | EXT. LIGHTS | 9 | TAXI TO RUNWAY HOLDING POINT | | | **Start Checklist / Co-Pilot please see below** |
| 149 | ECAM | WHEEL PAGE | 1 | BRAKE TEMP = below 150 | CHECK | Cop | CoP set Brake Fans On if Brake Temp >150 |
| 150 | MAIN PANEL | BRAKE FAN | 11 | BRAKE FANS | OFF | Cop | |
| 151 | PEDESTAL | ENGINE | 5 | ENG MODE SEL = NORMAL | CHECK | | |
| 152 | PEDESTAL | TCAS | 10 | TCAS TA/RA plus TILT ABOVE | SET | CoP | |
| 153 | OVERHEAD | EXT. LIGHTS | 9 | EXT. LIGHTS | SET | CoP | Strobes, Land. and Nose Lights |
| 154 | | | | PF SLIDING TABLE | STOWED | Cop | **Checklist complete** |
| 155 | PEDESTAL | WXR | 11 | TILT: UP and select 4 degrees up | SET | | |
| 156 | MAIN PANEL | N/SKID NW | 10 | A/SKID & NW STRG | CHECK = ON | | |
| 157 | PEDESTAL | RADIO | 1 | TAKEOFF / LINE UP CLEAR | OBTAIN | | If ATC is used |
| 158 | PEDESTAL | RADIO | 1 | ATC (if no AUTO position) | ON | | If ATC is used |

148. **Start Before Takeoff CL:** After the TAXI CL has been finished a message on the INFOBAR will pop up displaying the options to manually start the checklist.
- You can start the CL manually using the MCDU 2 CHECKLIST menu option
- Just use "1" on the keyboard

For several reasons the automatic start of this checklist has been removed completely.

149. **Brake Temperature:** BRAKE TOO HOT: Values changed to 150/100°. Before Takeoff CL also accepts brake temperature of >150° and proceeds if brake fans are ON.

152. **TCAS**: Use the ring of the knob to set the mode to TA/RA. But below 1000 ft the ND will display TA ONLY.

153. **Ext. Lights:** STROBE=ON – BEACON=ON – WING=OFF – NAV&LOGO=2 – RWY TURN OFF=ON – LAND= ON – NOSE = TO. If light is OFF the copilot sets the switch to ON.

157. **Approach Path Clear:** Look left and right and assure that the runway is clear. Then enter the runway 08 for takeoff.

## 5.11 Takeoff (Part 1)

| NO | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| **TAKEOFF – Part 1** | | | | | | | |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 158 | PEDESTAL | THR LEVER | 4 | SET LEVERS TO | MAN TOGA | | |
| 159 | GLARESHIELD | CHRONO | 7 | CHRONO | START | CoP | Push upper right button |

158. **Takeoff:**



Picture 54: 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 08 (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 TOGA detent (you will hear three clicks) and it will be confirmed on the FMA. You can also use the FLEX detent (if the runway is not short or not wet). But for this flight based on the short runway at LOWI we decide to use MAN TOGA thrust takeoff.
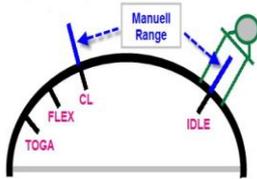


**Picture 55: Thrust Lever Positions**

159. **Start Chronometer:** If takeoff thrust has been set (>50% N1) the copilot automatically starts the chronometer (time is displayed in the lower left corner of the ND).

## 5.12 Takeoff Abort

| ABORT TAKEOFF | | | | | |
|---|---|---|---|---|---|
| **PANEL** | | | **ACTION** | | **REMARK** |
| TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 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 # 132** | | | | | |

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 (chapter 4.3 of this manual) and start from there.

## 5.13 Takeoff (Part 2)

| TAKEOFF – Part 2 | | | | | | | |
|---|---|---|---|---|---|---|---|
| NO. | **PANEL** | | | **ACTION** | | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 160 | | | | Takeoff thrust is set | | | Start Checklist / Co-Pilot - if selected |
| 161 | | | | "Takeoff" | | | |
| 162 | | | | "MAN" „TOGA" and „SRS" | „Power set" | | |
| 163 | | | | | "100 Knots" | | At 100 |
| 164 | | | | "Checked" | | | |
| 165 | | | | | "V1" | | At GS = V1 |
| 166 | | | | | "Rotate" | | At GS = VR |
| 167 | | | | | "Positive climb" | | Radio Alt >50 ft, VS > 100 ft/min |
| 168 | MAIN PANEL | GEAR | 7 | "Gear up" | GEAR UP | CoP | FSX: G |
| 169 | PEDESTAL | SPEED-BR. | 6 | GROUND SPOILERS | DISARM | CoP | FSX: / |
| 170 | MAIN PANEL | GEAR | 7 | GEAR STOWED | "Gear is up , lights off" | | Radio Alt >50 ft, VS > 100 ft/min |
| 171 | | | | At Thrust Red. / Acceleration Alt. | | | |
| 172 | PEDESTAL | THR LEVER | 4 | SET LEVERS TO | "CLIMB THRUST" | | Blinking announcement in FMA |
| 173 | FCU | AP | 5 | AUTOPILOT | "AUTOPILOT ON" | | |
| 174 | | | | At "Green Dot Speed" / "S-Speed" | | | |
| 175 | PEDESTAL | FLAPS | 8 | "Flaps zero" | SELECT | CoP | FSX: F6 |
| 176 | | | | | "Flaps zero" | | Checklist complete |
| 177 | FCU | ALTITUDE | 3 | Cruise Altitude | SET TO 31.000 feet | | |

163. **100 knots:** There is no "100 knots" call if V1 is lower than 105 knots
166. **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 54).
   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 also see picture 54). But this not the case at LOWI Rwy 08.



Sidestick-Position

Yaw Bar – Runway Position
(Because of no ILS it is not available at LOWI 08)
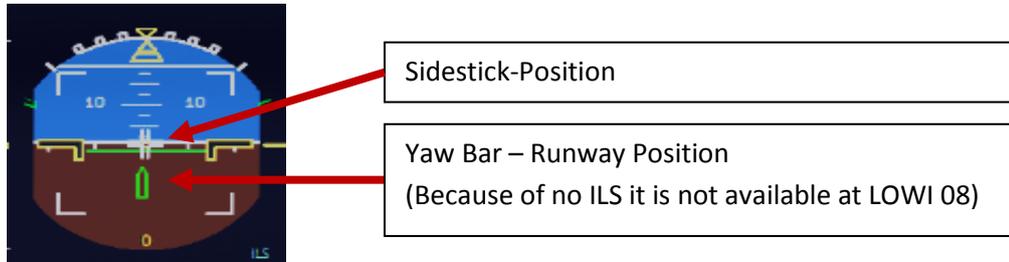
**Picture 56: Joystick: On the runway (attitude indicator)**

   c. When the speed is over 80 knots, the stick can be released to come back to a neutral position.
   d. When VR = 120 knots is reached (indicated by a magenta circle on the PFD speed tape), the Copilot will announce "ROTATE" – then pull the stick for the rotation. If the FD (showing max. 18° pitch angle) is not perfectly stable at this time, take a 15° pitch angle.
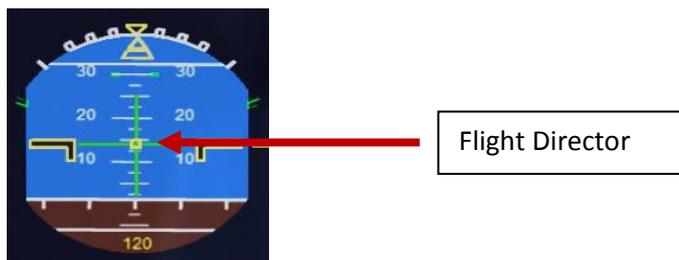


Flight Director

**Picture 57: 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
170. **Landing Gear – Autobrake**: The autobrake will automatically turn off 10 seconds after the Landing Gear is retracted
171. **Thrust Reduction Altitude**: When the THR RED altitude is reached (3407 feet in our example – airport
172. elevation plus 1500 feet) a flashing LVR CLB message appears on the FMA (1st column). Move the thrust levers back to the CL detent (two clicks back). 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. Take a 10° pitch angle.
XXX. **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.

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

177. **CLIMB / Altitude: Before** the first set altitude of 12.000 feet will be reached (see # 69) 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

| TAKEOFF – Part 2 | | | | | | |
|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |
| 178 | PEDESTAL | WXR | 11 | TILT: DOWN | SET | |
| 179 | EFIS | INFOR. | 4 | EFIS OPTION | ARPT | |
| 180 | PEDESTAL | RADIO | 1 | RADIO NAV | CHECK | |
| 181 | PEDESTAL | ECAM | 1 | ECAM MENU | REVIEW | |
| 182 | MCDU | PROG | | OPT / MAX ALTITUDE | CHECK | |
| 183 | | | | FLAPS UP and RETRACTED | | **Start Checklist / Co-Pilot - if selected** |
| 184 | PEDESTAL | ENGINE | 5 | ENG MODE SEL = NORMAL | CHECK | Cop |
| 185 | PEDESTAL | SPEED-BR. | 6 | GROUND SPOILERS | DISARMED | CoP | FSX: / |
| 186 | PEDESTAL | FLAPS | 8 | FLAPS UP and RETRACTED | CHECK | CoP | FSX: F6 |
| 187 | ECAM | GEAR | 2 | GEAR IS UP and STOWED | „Gear is up, Lights off" | CoP |
| 188 | OVERHEAD | EXT. LIGHTS | 9 | RUNWAY / NOSE = OFF | OFF | CoP |
| 189 | OVERHEAD | AIR COND | 7 | 1ˢᵗ and 2ᴺᴰ PACK are ON | CHECK | Cop |
| 190 | OVERHEAD | ANTI-ICE | 8 | ANTI ICE (1 &2) | AS REQUIRED | | =OFF |
| 191 | PEDESTAL | TCAS | 10 | TCAS = TA/RA and TILT = ABV or N | CHECK and set to ABV | |
| 192 | EFIS | A PRESSURE | 2 | BARO REF | X-CHECK (Read out) | | **Checklist complete** |

We are flying the SID according to the following chart:
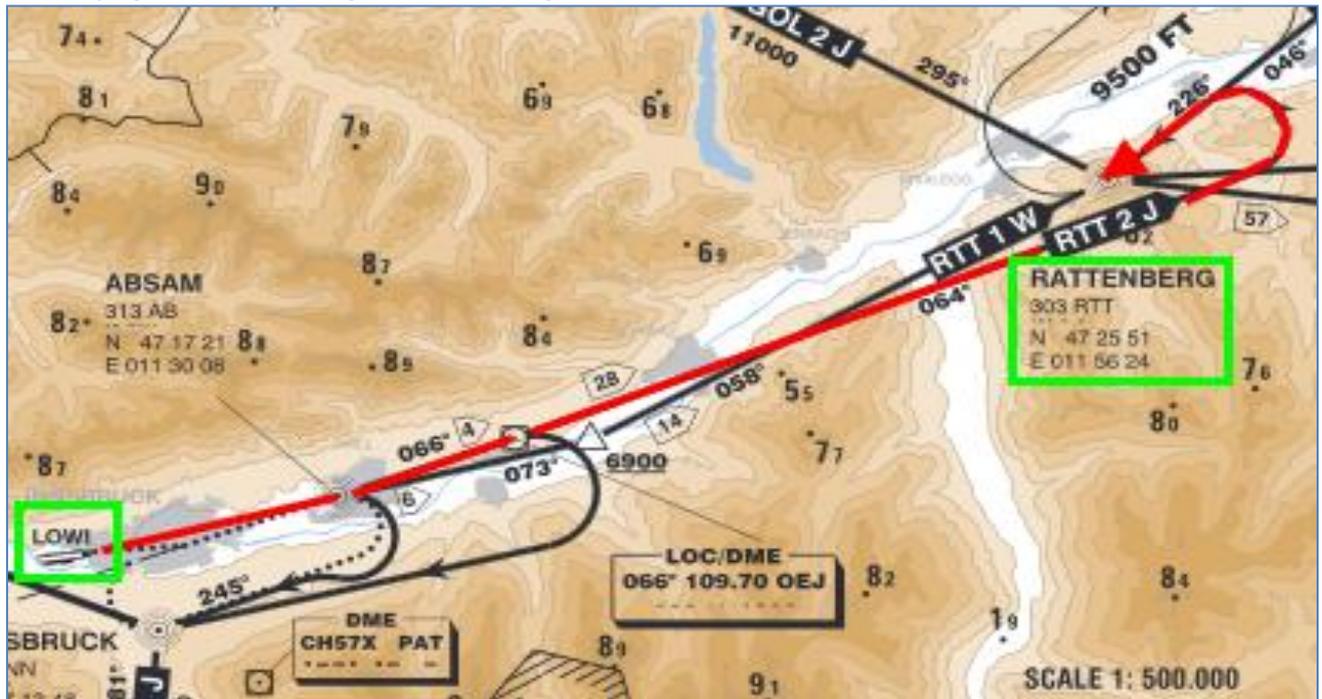


Picture 58: LOWI - Runway 08 – SID RTT2J
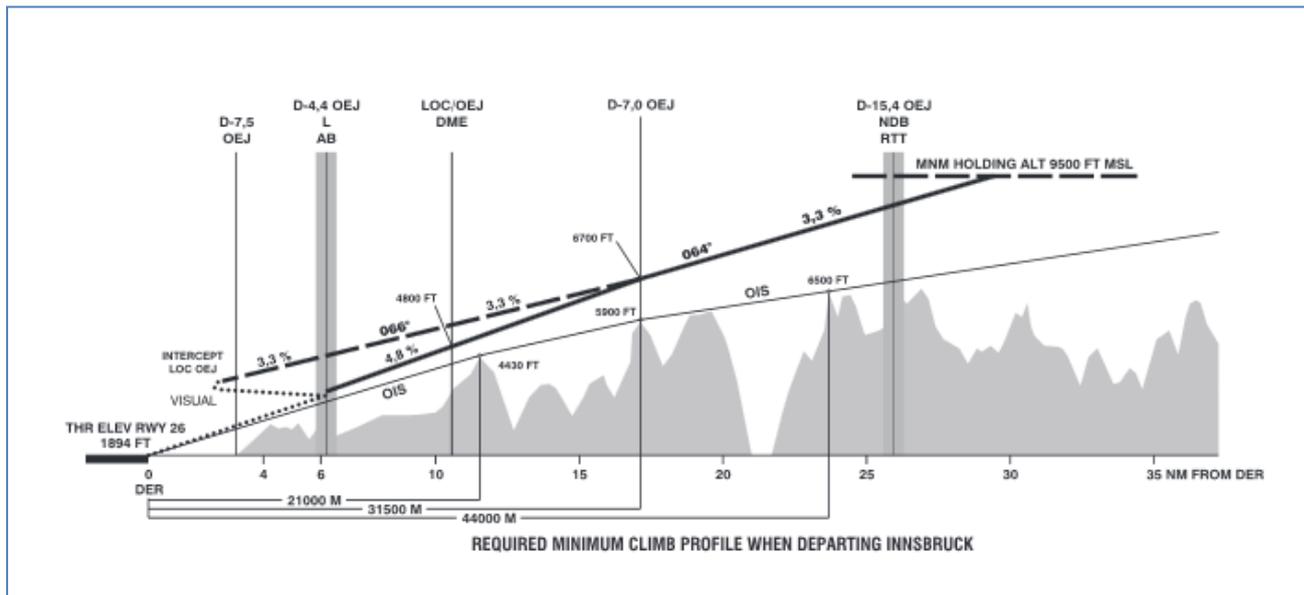
Picture 59: LOWI - Runway 08 – Climb Profile

## 5.15 Climb

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 193 | | | | CLIMB CHECKLIST | | | Start Checklist / Co-Pilot - if selected |
| 194 | | | | At 10.000 feet | | | |
| 195 | | | | | "Passing 10.000" | | |
| 196 | OVERHEAD | EXT. LIGHTS | 9 | LANDING LIGHTS | LIGHTS OFF | CoP | |
| 197 | FCU | ALTITUDE | 3 | Cruise Altitude | CHECK | | =31.000 feet |
| 198 | | | | At Transition Altitude | | | = Checklist completed |
| 199 | GL.SH /EFIS | A PRESSURE | 13 / 2 | BARO REF to STD | SET / X CHECK | CoP | |

193. **Start Climb Checklist:** The checklist starts under the following conditions:
   - "After TO" CL is no longer active
   - Thrust levers are in Climb mode
   - FMA State = CLB

195. **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 296 knots (FMGC or MCDU) based on the COST INDEX used for this flight.
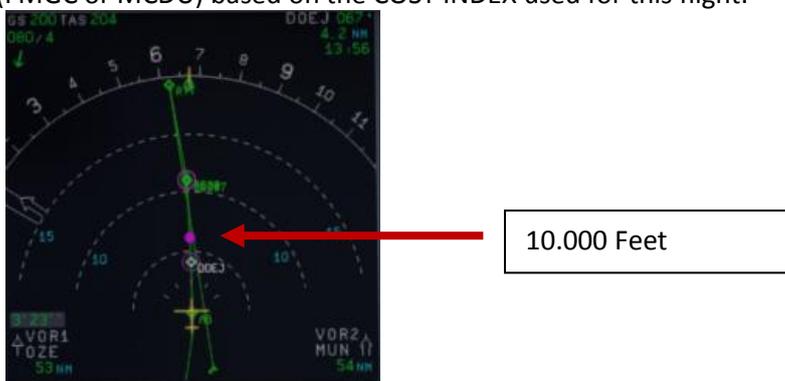


10.000 Feet

Picture 60: 10.000 Feet

196. **Landing Lights:** For high altitude airports (> 5.000 feet) the function has been changed as follows:
   - During the CLIMB CL the 10.000 feet call is omitted and the landing lights are switched off by the copilot after the Baro Check at the transition level.

- During the DESCENT also already at the transition level (> 10.000 feet) the Landing Lights as well as Landing System are set to ON by the copilot.

199. **Transition Altitude:** Setting up the MCDU we changed the proposed transition altitude (set to 11.000 feet for Innsbruck) i.e. now reaching this value of 11.000 feet the system has to be set to "STD = Standard". When the value starts blinking in the PFD please pull the "BARO" button. Please also check the ISIS (Glareshield #13) e. g. the value is set to STD (right click on the knob at the bottom right)

## 5.16 Cruise

| CRUISE | | | | | | |
|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 200 | | | | FMA "ALT / ALT CRZ" | | Start Checklist / Co-Pilot - if selected |
| 201 | PEDESTAL | TCAS | 10 | TCAS TA or TA/RA plus TILT NORMAL | SET      CoP | |
| 202 | OVERHEAD | SIGNS | 11 | SEAT BELTS = OFF or AUTO | CHECK and set to OFF      CoP | |
| 203 | | | | SLIDING TABLE - COPILOT | EXTENDED      CoP | Procedure complete |
| 204 | PEDESTAL | ECAM | 1 | ECAM MEMO / SYS PAGES | REVIEW | |
| 205 | MCDU | Var.PAGES | | FLIGHT PROGRESS | CHECK | |
| 206 | MCDU | FUEL PRED | | FUEL | MONITOR | |
| 207 | MCDU | PROG | | NAV ACCURANCY | CHECK | |
| 208 | OVERHEAD | AIR COND | 7 | CABIN TEMP | MONITOR | |

200. **Cruise Altitude:** As soon as the cruise altitude of 31.000 feet has been reached (before passing the waypoint INN and marked on the ND with a blue arrow showing up) the FMA data on the PFD should change to MACH, ALT CRZ and NAV. The CRUISE procedure (#201 to #203) will automatically start if the MCDU is fully programmed. But there are no "calls" for this procedure.
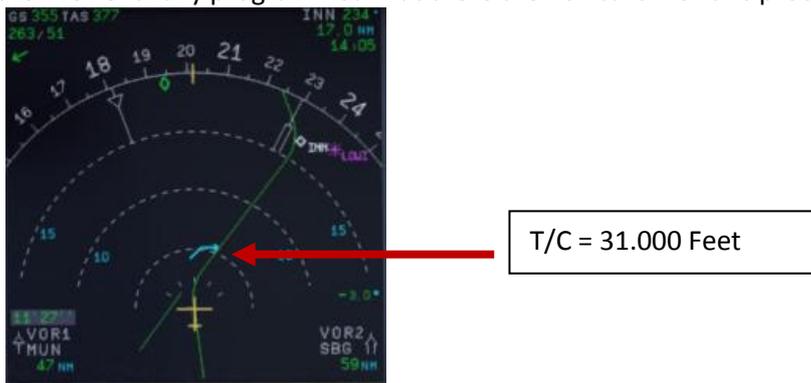


T/C = 31.000 Feet

**Picture 61: T/C – Top of Climb = 31.000 Feet**

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

## 5.17  MCDU PERF APPR PAGE

Before starting the Descent Preparation CL and before initiating Descent the **MCDU PERF APPR page** should be checked respectively missing data added.

| MCDU PERF APPR PAGE | | | | | | |
|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 209 | MCDU | PERF | APPR | QNH, TEMP, MAG WIND | ENTER DATA | |
| 210 | MCDU | PERF | APPR | TRANS ALT | ENTER DATA | = 5000 |
| 211 | MCDU | PERF | APPR | BARO / RADIO | ENTER DATA | = BARO 210 |
| 212 | MCDU | PERF | APPR | VAPP | CHECK | |
| 213 | MCDU | PERF | APPR | LDG CONF | CHECK | |

Picture 62: MCDU – PERF – APPR page  (A319 and A320)

209. **QNH; TEMP; MAG WIND:** Enter data (for arrival airport LFMN)
210. **TRANSITION LEVEL:** (TRANS ALT) for LFMN = 5000 feet (because it is different from transition altitude of departure airport = 11.000)
211. **BARO – DA (decision altitude):** According to the chart for LFMN ILS04L it is a CAT1 ILS approach. Do not get confused by the CAT 3 FMA on the PFD. This FMA only tells you what the airplane is capable of, not what the airport is offering. You can only fly a CAT 3 approach if both the FMA says CAT3 and the airport has a CAT3 ILS.

So as we are flying an ILS CAT1 landing at LFMN we have to enter a Barometric-altimeter DA (decision altitude). Barometric-altimeter MDA/DA is used for NPA, RNAV as well as ILS CAT1 whereas RADIO-altimeter DH (decision height) is used for ILS CAT2 and 3 landings. If there is no manual input a standard BARO value of 200 will automatically be entered by the Copilot. But as the actual BARO-DA value for our arrival airport LFMN (Nice) Runway 04L and ILS approach is according to the charts = 210 please enter this value.

The information about the available ILS CAT you can get from the charts. The category certification entails a lot of things. The most important one for CAT2 and CAT3 is a monitoring of the validity of the ILS signal and a backup power source.  For charts there are a few different formats available but on every ILS chart you will see the capability of the ILS by looking at the minimums. In LIDO charts it is even spelled out CAT 1, Cat 2 etc. On Jeppesen/AIP charts you sometimes have an extra ILS CAT2/3 charts besides the ILS CAT 1 chart.
212. **VAPP:** It is the final approach speed, will automatically be calculated / inserted by the system and calculated in the following way: VLS plus 1/3 of the tower headwind component. The value of VAPP is limited so that it is never less than VLS + 5 or more than VLS +15. As a result, VAPP is increased above its minimum value for runway headwinds above 15 knots. VAPP correction is not increased further for headwinds exceeding 45 knots.

Additionally the "**groundspeed mini function**" (GS mini) has been implemented, but it does not change VAPP, instead, it increases the target (bug) speed when the headwind is greater than the expected landing headwind - the wind that VAPP was based on. This is done in case the greater headwind disappeared all at once (wind shear), the airplane would be at VAPP not VAPP minus the loss of wind. The speed bug moves in response to the wind. For more information on "GS mini" look at http://www.pprune.org/archive/index.php/t-408276.html.
213. **LDG CONF :** (Landing Configuration)If no value is entered manually it defaults to FULL.

## 5.18 Descent Preparation

| DESCENT PREPARATION | | | | | | |
|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 214 | | | | 1 min after CRZ level has been reached | | Start Checklist / Co-Pilot - if selected |
| 215 | | | | SEAT BELTS = ON or AUTO | CHECK and set to ON | Cop | |
| 216 | OVERHEAD | ANTI-ICE | 8 | ANTI ICE = OFF | CHECK | |
| 217 | PEDESTAL | RADIO | 1 | LANDING INFORMATION | RECEIVED | If ATC is used |
| 218 | EFIS | A.PRESSURE | 2 | BARO REF = STANDARD | CHECK | Cop | |
| 219 | MCDU | PERF. | APPR | AIR PRESSURE ARRIVAL AIRPORT | "Checked" and readout | Cop | QNH= 1013 |
| 220 | MCDU | PERF. | APPR | DECISION ALTITUDE | "Checked" | Cop | BARO = 210 |
| 221 | MCDU | PERF. | APPR | LDG CONF (Flaps) | "Checked" | CoP | Checklist complete |

214. **DESCENT PREP. CL:** It now can be manually started 1 min after reaching CRZ LVL. 40 NM before T/D (CRUISE CL still active) – a specific information on the INFOBAR pops up also showing the distance to the automatic start at 10 NM before the T/D. After the checklist has been finished a message on the infobar pops up "INITIATE DESCENT". Initiate descent when the T/D marker on the ND has been reached.

215. **SEAT BELT SIGN :** It is also OK if the switch is set to AUTO

216. **ANTI ICE**: Should be OFF but if ANTI ICE is ON it is also accepted – condition then will be confirmed

218. **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.
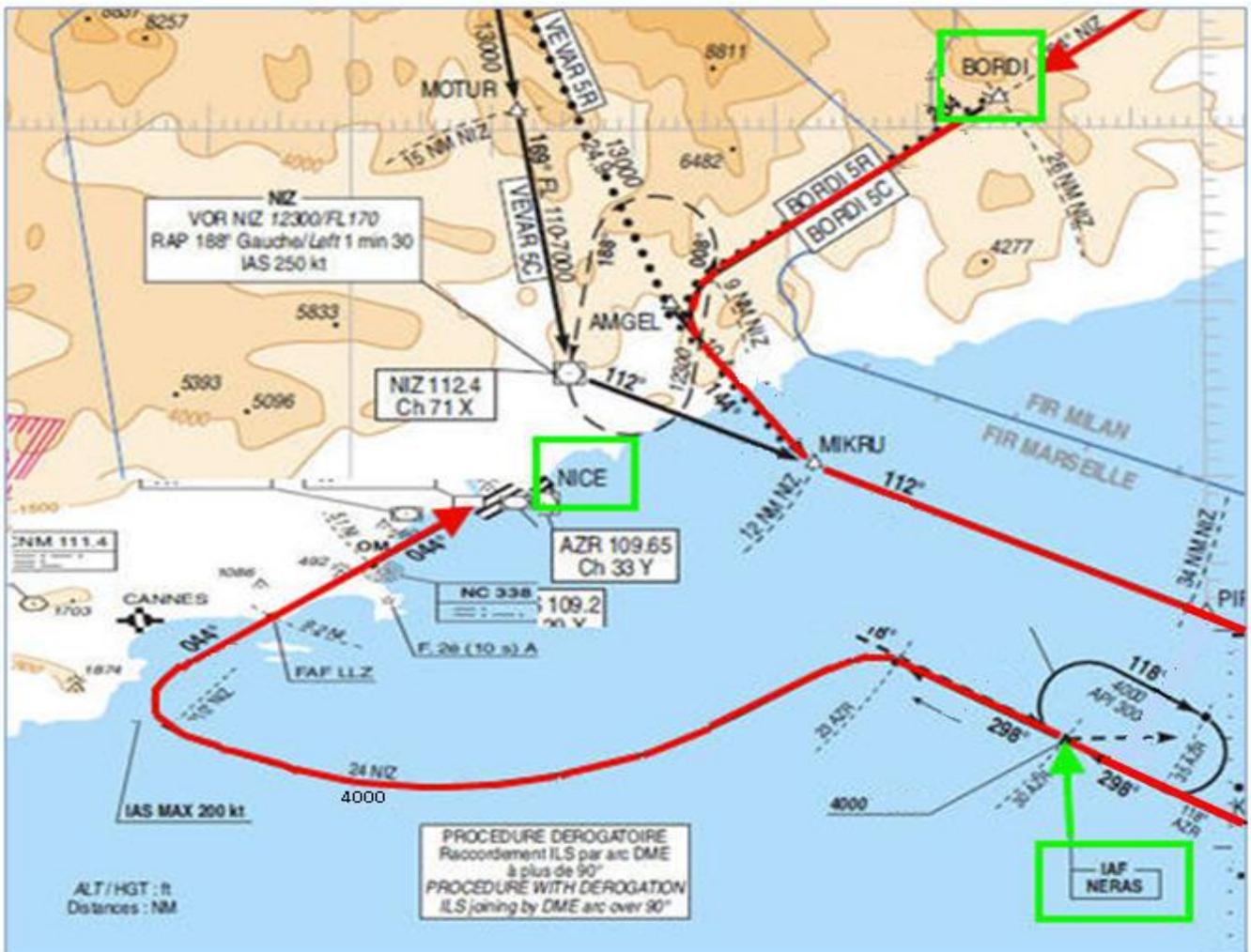


**Picture 63: LFMN ILS04L - Chart STAR „BORDI" / TRANS "NERAS"**

## 5.19 Descent

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| **DESCENT** | | | | | | | |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 222 | FCU | ALT | 3 | INSERT NEW HEIGHT | INSERT | | = 4.000 |
| 223 | FCU | ALT | 3 | INITIATE DESCENT | PUSH KNOB | | |
| 224 | MAIN PANEL | PFD | 1 | DESCENT | MONITOR | | |
| 225 | PEDESTAL | SP BRAKES | 6 | SET | AS REQUIRED | | |
| 226 | | | | Vert. Mode = DES / Desc.Prep.CL = compl. | | | Starts next Checklist / Co-Pilot - if selected |
| 227 | MAIN PANEL | PFD | 1 | FMA | CHECK | | |
| 228 | PEDESTAL | TCAS | 10 | TCAS = TILT BELOW | CHECK and SET | CoP | |
| 229 | | | | At 10.000 feet: | | | |
| 230 | OVERHEAD | EXT. LIGHTS | 9 | LANDING LIGHTS | ON | CoP | |
| 231 | EFIS | FD / ILS | 3 | ILS LOCALIZER (LS) | PUSH | CoP | EFIS |
| 232 | | | | At Transition Altitude | | | = 5000 |
| 233 | EFIS | A PRESSURE | 2 | BARO REF to actual pressure value | SET / X CHECK | CoP | Checklist complete |

222. **Descent to Altitude: Before the T/D** (Top of Descent) point (near BORDI) is reached (marked on the ND flight path by a white arrow showing down), **the altitude should be set to 4.000 feet**. But do not push the knob before T/D is not reached

223. **Initiating Descent:** There are various methods for descent but we will use:
**Managed Mode:**. Reaching T/D or if the T/D marker disappears or DECELERATE is displayed on the PFD (whatever happens first): Just push 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 64: Top of Descent – Initiate descent

229. **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. before PIRAM.



10.000 feet Deceleration Point

Picture 65: ND: Deceleration Point

231. **LS Pushbutton:** If the button is used (normally when passing 10.000 feet) the "Vertical Glideslope" as well as the "Lateral Localizer" shows up on the PFD. The ND display shows ILS04L on top as soon as the remaining distance to destination is 250 NM or less.

232. **Transition Altitude:** Setting up the MCDU PERF APPR page we set it to 5.000 feet for the approach (#210). So at this altitude the Barometric Reference Value will be set (as well as on ISIS) .

233. **Baro Ref Cross Check**: The QNH value entered in the MCDU PERF APPR page is used by the copilot. If no value has been entered there then the current ambient pressure value will be used (= keyboard [B]). It is not mandatory to fill the QNH-field in the MCDU – PERF – APPR page. But if a value is entered the unit used (inHg or hPa) must be identical with the settings the FCU – QNH display. If the unit is later changed the value in MCDU PERF APPR page automatically will be adjusted. The FSX standard conversion ratio of 1.013 = 29.92 is used for this baro function.
Like in reality the copilot enters those figures in visible steps and not at once. Then there is a pause of 2 seconds - during which the user can enter a different value – before the checklists continues.

## 5.20 Approach

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| **APPROACH** | | | | | | | |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 234 | | | | 5 NM before DECEL pseudo waypoint | | | Starts next Checklist / Co-Pilot -  if selected |
| 235 | ECAM | ECAM | 1 | ECAM MESSAGE | CHECK | | |
| 236 | | | | SLIDING TABLE S - STOWED | STOWED | CoP | |
| 237 | OVERHEAD | SIGNS | 11 | CABIN SIGNS = ON | CHECK or set to ON | | |
| 238 | MCDU | PROG | | NAV ACCURANCY | CHECK | | |
| 239 | EFIS | A.PRESSURE | 2 | BARO REF CROSS CHECK | SET and Read out | CoP | Checklist complete |
| 240 | | | | Initial approach: | | | |
| 241 | OVERHEAD | SIGNS | 11 | SEAT BELTS | CHECK ON | | AUTO is also OK |
| 242 | PEDESTAL | ENGINE | 5 | ENG MODE | CHECK NORM | | |
| 243 | | | | Approx. 15 NM from touchdown: | | | |
| 244 | MCDU | PROG | | NAV ACCURANCY | MONITOR | | |
| 245 | MAIN PANEL | PFD | 1 | POSITIONING | MONITOR | | |

234. **Approach CL:** The APPROACH CL now is available for manually start (MCDU2 CHECKLIST MENU = marked in orange) app. 10 NM before the DECEL pseudo waypoint and a message pops up on the INFOBAR showing the distance and explains the start options. It starts automatically app. 5 NM before DECEL pseudo waypoint.
For the start of the APPROACH CL it is not necessary anymore that the DESCENT CL has been finished. Even if the BARO CHECK has not yet been completed the APPROACH CL can be started. As a reminder in such a case "DESCENT CL" blinks on the right MCDU.

235. **ECAM Message:** There is a very important difference between caution (amber) and warning (red). If the CLR button is ON it is necessary previously to confirm a "warning" or "caution" message.

236. **Sliding Table:** If the copilots sliding table had been extended at cruise level. Even if the copilots function is set to OFF now the captains and copilots sliding tables will automatically be retracted.

237. **Cabin Signs:** SEAT BELTS=ON or AUTO (if OFF Cop sets to ON), NO SMOKING=ON

239. **Baro Ref Cross Check**: The QNH value entered in the MCDU PERF APPR page is used by the copilot. If no value has been entered there then the current ambient pressure value will be used (= keyboard [B]). It is not mandatory to fill the QNH-field in the MCDU – PERF – APPR page. But if a value is entered the unit used (inHg or hPa) must be identical with the settings the FCU – QNH display. If the unit is later changed the value in MCDU PERF APPR page will be automatically adjusted.
Like in reality the copilot enters those figures in visible steps and not at once. Then there is a pause of 2 seconds - during which the user can enter a different value – before the checklists continues. The FSX standard conversion rate of 1.013 = 29.92) is used for this baro function.

Picture 66: Chart TRANS NERAS



Picture 67: Chart ILS 04L Nice

Picture 68: Final Procedure - ILS Approach Profile LFMN04L
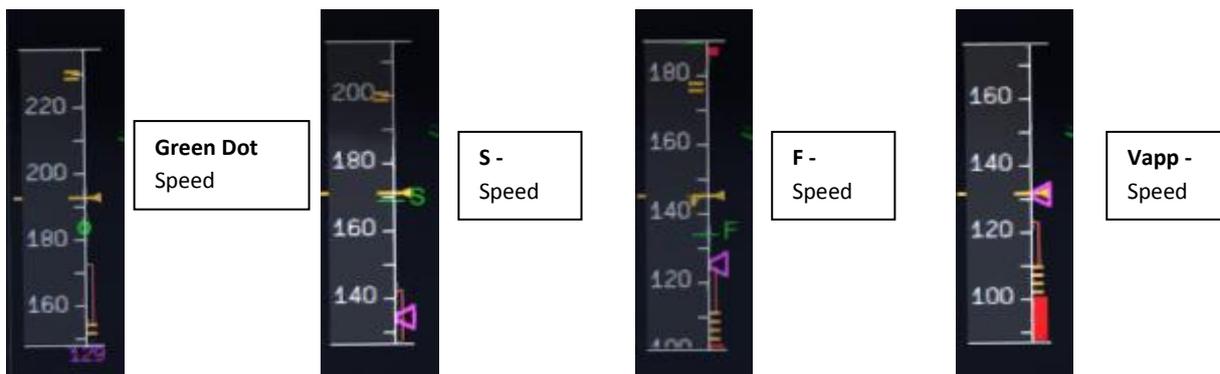


Picture 69: Speeds "Green Dot", S, F and Vapp on PFD

## 5.21  Final

There are two main modes for the approach: Using "Managed Speed" or "Selected Speed (manually)". Our Checklist- and Copilot-Function 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).

The Final CL activation is "independent" from the activation of the MCDU – PERF – APPR mode activation. The FINAL checklist will be automatically started after the APPR CL has been completed.

| **FINAL** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | | **REMARK** |
| | **TYP** | **PART (Name)** | **PART (No.)** | **PF (PILOT FLYING)** | **PM (PILOT MONITORING)** | | |
| 246 | | | | Appr. CL has been completed | | | Starts next Checklist / Co-Pilot – if selected |
| 247 | MCDU | PERF | | APPR PHASE | ACTIVATE | CoP | |
| 248 | MAIN PANEL | PFD | 1 | CALL: LOCALIZER ALIVE | | CoP | |
| 249 | FCU | APPR | 6 | APPR | PUSH | | |
| 250 | MAIN PANEL | PFD | 1 | LOCALIZER CAPTURED | CHECK | 241 | MAIN PANEL |
| 251 | | | | Green Dot Speed | | | |
| 252 | PEDESTAL | FLAPS | 8 | FLAPS 1 | SELECT | CoP | FSX: F7 |

| 253 | | | | S-Speed | | | | |
|---|---|---|---|---|---|---|---|---|
| 254 | PEDESTAL | FLAPS | 8 | FLAP 2 | SET | | FSX: F7 | OPTIONAL |
| 255 | | | | Gkidescope becomes alive | | | | |
| 256 | FCU | AP | 5 | Second AP | ON | | | |
| 257 | | | | Glidescope captured | | | | |
| 258 | MAIN PANEL | PFD | 1 | G/S CAPTURE | CHECK | | | |
| 259 | | | | Rad. Alt. > 2.000 ft = LANDING MEMO | | | | |
| 260 | PEDESTAL | FLAPS | 8 | FLAPS 2 | SELECT | CoP | FSX: F7 | |
| 261 | FCU | ALT | 4 | GO AROUND ALT | SET TO 2.000 FEET | CoP | Just enter - do **not** push knob | |
| 262 | MAIN PANEL | GEAR | 7 | L/G DOWN | SELECT | CoP | FSX: G | |
| 263 | PEDESTAL | SPEED-BR. | 6 | GROUND SPOILERS | ARM | CoP | Mouse click: right | |
| 264 | OVERHEAD | EXT. LIGHTS | 9 | NOSE LIGHT (if not TAXI) = TO | ON | CoP | | |
| 265 | | | | When L/G down, below REF SPEED | | | | |
| 266 | PEDESTAL | FLAPS | 8 | FLAPS 3 | SELECT | CoP | FSX: F7 | |
| 267 | | | | Next REF SPEED: | | | | |
| 268 | PEDESTAL | FLAPS | 8 | FLAPS FULL | SELECT | CoP | FSX: F7 / **Checklist complete** | |
| 269 | MAIN PANEL | EWD | 5 | LANDING MEMO | CHECK NO BLUE | | | |
| 270 | FCU | SPD | 1 | Set speed to VApp | SET | | = 126 (MCDU – PERF – APPR page) | |
| 271 | PEDESTAL | TCAS | 10 | TCAS | SET TO „TA ONLY" | | | |
| 272 | MAIN PANEL | PFD | 1 | FMA | CHECK | | | |
| 273 | MAIN PANEL | PFD | 1 | LOC CAPTURE | MONITOR | | | |
| 274 | ECAM | ECAM | 1 | ECAM WHEEL PAGE | CHECK | | | |
| 275 | FCU | ATHR | 7 | A/THR | CHECK SPD | | | |
| 276 | OVERHEAD | ANTI-ICE | 8 | WING ANTI ICE | CHECK OFF | | | |

247. **Initiate Approach Phase:**
After the APPROACH CL has been finished the APPR PHASE in the MCDU PERF APPR page immediately should be manually activated (RW procedure).
If the MCDU F-PLAN DECEL pseudo waypoint (calculated by the FMGC to initiate deceleration in order to be stabilized at VAPP at a specified point on the approach profile, normally at 1000 feet AGL) is different from the point at which the APPR PHASE automatically will be initiated (7.200 feet radar altitude), it is ILS or NPA approach and distance to the airport less than 30 NM) a warning will appear on the INFOBAR "MCDU: Manually activate APPR PHASE".

- **Manually** activated by the user (MCDU – PERF - APPR page) if warning appears on the INFOBAR "MCDU: Manually activate APPR PHASE". In the "real world" the APPR PHASE is always activated manually and **never** automatically.
- **Automatically** at the Deceleration Pseudo Waypoint (please see picture below) if the APPROACH CL has been finished; the flight level is below 7.200 feet radar altitude, the RNAV mode is active and the distance to the airport is less than 30 NM. The (DECEL) pseudo waypoint is calculated by the FMGC to initiate deceleration in order to be stabilized at VAPP at a specified point on the approach profile, normally at 1000 feet AGL.



Deceleration Pseudo Waypoint

**Picture 70: Deceleration Point**

248. - **LOC Alive:** Before NI17 the localizer becomes "alive" and this will be confirmed by a PM call "LOCALIZER ALIVE". The conditions for this call are: The angle to the runway must be smaller than 90 ° and the Approach, Landing as well as BaroCheck are not active.

**Picture 71: LOC initiated near NI17**

249. **APPR Button:** Before passing NI17 (you are already flying at NI122) and after hearing the call "LOCALIZER ALIVE" = press the APPR button on the FCU.

250. **LOC Capture:** The "capture" will be confirmed i.e. lateral path has been caught. Please note: If you are pushing the APPR button too early (before turning to NI17/NI122) it might happen that the plane captures the localizer in the wrong direction. Please see also chapter 10.4 for details. First the lateral path will be caught (LOC* or LOC displayed on the PFD -FMA)



**Picture 72: LOC captured**

251. **Green Dot Speed / CLEAN:** After initiating the APPR Phase (#242) automatically the MCDU reduces the speed to "Green Dot Speed" (195 knots). But if the plane is already on the glidescope it is not going to change its pitch to reduce to "Green Dot Speed".

252. **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 – The flaps will be extended to 1 at least automatically 10 NM before the runway threshold if IAS is below VFE.

253. **S Speed:** After the flaps are deployed by the Copilot to 1 the MCDU automatically reduces the speed to S-Speed (172 knots). If the plane does not slow down to S-Speed then just use the speed brakes until S-Speed is reached.

**Some general information on the use of speed brakes:**

Normally you can use them whenever wanted. But there are some SOP things which have to be considered. The first one has to do with high altitude flying (FL300 and higher). You cannot yank them to their full position at once. You have to be smooth as to not disrupt the airflow to sudden. When on auto pilot the speed brake will not even fully open even if you put the lever at full. The Airbus is limiting the deployment a bit.

The second thing is that you may not use the speed brakes with flaps three or full. This will cause a roll moment that could impair controllability. Some models even have an autoretract when having the speed brakes out at Flaps three/full.

The whole point of the speed brakes is to slowdown the aircraft or to make it descent faster. If the autothrust is on and in SPEED mode it could be that the engine needs more thrust than idle to keep the managed/selected speed and this will give a warning. Having the speed brakes out and throttling

up is a no-no. It just does not make sense.

254. **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 VFE limits. This method is also supported by the Checklist- and Copilot-Function.

255. **Glideslope "alive":** When the Localizer has been captured (please see picture #70 above) soon after the vertical glide slope becomes "alive" (magenta rhombus fully appears) which will be confirmed by a call.

256. **Autopilot**:
- Only with an ILS approach programmed in the FMGC, the approach phase activated and the APPR button pushed on the FCU you do have the possibility to select both AP's at the same time. This will show as AP 1+2 in the PFD FMA.
- It is normal Airbus procedure to also select the second AP during an ILS approach. It does not matter if this approach is a CAT 1, 2 or 3. The main reason for this is that if one AP goes offline the other can take over. This is a principle that is called fail operational. Meaning that when one AP disconnects for whatever reason the second one will take over immediately - without any interference/action by the pilot. But in reality only one AP is doing the flying and the other one is just standing by to take over if needed. To have both AP's active is a requirement for CAT 3 approaches but it gives an added safety with CAT 1 and 2. So why not selected both during all ILS approaches Airbus must have thought.
- Autoland goes hand in hand with CAT 2 and 3 approaches but as a system it is separate. Autoland is technically possible with 1 AP but certification of the airline, airport, and airplane must all be met.
- An ILS CAT 1 may be landed manual at all times. A CAT 2 may be landed manual but this is also up to certification rules for the airline, airport and airplane - but normally an autoland is the norm here. A CAT 3 must be made with an auto land system.
- If autoland is used it means that there is no manual flight path interference of the pilots until after touchdown and the aircraft is landing fully automatic.
- In our case because LFMN ILS 04L allows only CAT 1 landings we will use both autopilots but will make no "autoland".

Additional information on the various CAT you will also find in #211.

258. **Glideslope "captured":** When the glideslope has been captured it will be confirmed by a call. After the vertical glide path has been caught the display on the PFD-FMA looks as follows (please see picture 71 below):
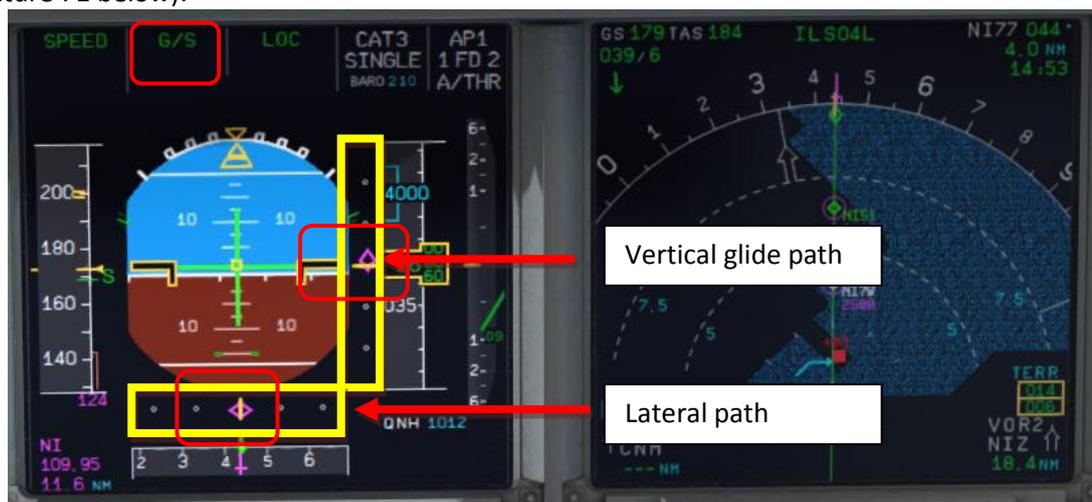


Picture 73: PFD – Glidescope captured - Vertical and lateral glide path

The middle of both fields shows the vertical and lateral position of the aircraft where as the magenta rhombus shows the actual position on 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 74: ND – ILS view LFMN Rwy 04L**

259. **Landing Memo:** The conditions for the Landing Memo are:
   - < 2000 feet RA above runway altitude
   - Flight mode: Cruise or Approach
   - Both thrust levers at or below CL detent

   The "LANDING" checklist is "interrupted" until the "Landing Memo" becomes available in the Upper ECAM. The Copilot then continues with the settings i. e. flaps 2, gear down etc.

259a. **Speed Restriction 160 knots:** On certain airports like p. e. EGLL speed restrictions apply like 160 kts before till 4 NM before the runway.  This is a bit difficult because on the other hand SOP states the plane has to be fully established at 1000 feet RA. So Flaps 2, speed brakes and sometimes even gear down is used to keep the 160 knots. If the Checklist, the Copilot and SPD SEL = 160 knots is used the gear will not automatically be deployed at <2000 feet RA as well as the flaps not set to 3 and full – only after SPD SEL is <160 knots or in MNGD mode.

260. **Flaps 2:** At calculated speed (but must be lower than VFE = 200 knots) the flaps are automatically extended to 2 by the copilot (if = ON). If the calculated flaps 2 extension speed is higher than VFE the plane must be near MLW or even above. This means it is an emergency situation. In such a case do not use "Managed Speed", but set the speed manually to a value below VFE = 200 knots (e.g. 195 knots). The flaps then will be automatically extended by the copilot (if = ON). After the flaps have been extended to 2 you can again use "Managed Speed" for landing.

261. **GoAround ALT:** 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. Set the GoAround Altitude according to the FPLAN e.g.  change the set altitude on the FCU to the first altitude to be reached after a "Go Around". Please just change the altitude and do **not** press or pull the knob at this point. In case the Copilot function is enabled it is automatically set by the copilot under following conditions:
   - FAF passed - plus 0.5 NM added
   - Actual flight level below GA ALT
   - Actual flight level below FCU set ALT
   - Vertical speed below 250 knots

   If the copilot function is set to ON the highest value is automatically inserted using the MCDU FPLAN data. The value will be entered by the copilot in visible steps (with sound) and also considering the 100 and 1000 switch. Some values like 3.490 feet cannot be entered so the next possible higher value which means for 3.490 = 3.500 has to be or are entered.

   If no values are available in the F-PLAN or there is no GA flight path available in the NAV DB the copilot sets the value to a value of (airport altitude rounded to next full 1.000) plus 4.000 feet e. g.

normally to 5.000 feet.

269. **Landing Memo / blue entries - :** Please check if there are no "blue" entries in the Landing Memo. If for some reasons there are still "blue" entries (you might have forgotten to make certain settings) then please make those settings now.

270. **Set VAPP:** 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 126 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 – i.e. nothing has to be done as we are using the "Managed Mode".
It is the final approach speed and automatically be calculated / inserted by the system. It is calculated in the following way: VLS plus 1/3 of the tower headwind component. The value of VAPP is limited so that it is never less than VLS + 5 or more than VLS +15. As a result, VAPP is increased above its minimum value for runway headwinds above 15 knots. VAPP correction is not increased further for headwinds exceeding 45 knots. No additions are made for gusts.

275. **Auto Throttle:** Leave the A/THR on.....

276. **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).


## 5.22 Landing

| LANDING | | | | | | |
|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 277 | | | | Flaps in Landing Config. (MCDU Settings) | | Start next Checklist / Co-Pilot - if selected |
| 278 | MAIN PANEL | GEAR | 7 | LAND. GEAR = FULL EXTRACTED | CHECK CoP | |
| 279 | PEDESTAL | SP. BRAKEs | 6 | GROUND SPOILERS = ARMED | CHECK CoP | FSX: Right mouse click |
| 280 | MAIN PANEL | AUTO BRAKE | 6 | AUTO BRAKES = MEDIUM | SET CoP | |
| 281 | OVERHEAD | EXT. LIGHTS | 9 | NOSE = TO or TAXI / LANDING L. = ON | CHECK CoP | |
| 282 | FCU | ALT | 3 | GO AROUND ALT | CHECK CoP | |
| 283 | | | | AT DECISION ALTITUDE | | |
| 284 | FCU | AP | 5 | AP | OFF CoP | FSX: Z |
| 285 | | | | At 20 feet: | | |
| 286 | | | | FLARE | PERFORM | |
| 287 | MAIN PANEL | PDF | 1 | ALTITUDE | MONITOR | |
| 288 | PEDESTAL | THR LEVER | 4 | THRUST LEVERS | IDLE | FSX: F1 |
| 289 | | | | At touchdown: | | |
| 290 | PEDESTAL | THR LEVER | 4 | REV | MAX | FSX: F2 |
| 291 | | | | BRAKES | AS REQUIRED | |
| 292 | | | | At 70 knots: | | |
| 293 | PEDESTAL | THR LEVER | 4 | REV | IDLE | FSX: F1 |
| 294 | | | | At taxi speed: | | |
| 295 | PEDESTAL | THR LEVER | 4 | REV | STOW CoP | |
| 296 | | | | Before 30 knots: | | |
| 297 | MAIN PANEL | AUTO BRAKE | 6 | AUTOBRK | DISENGAGE CoP | Checklist complete |
| 298 | FCU | AP | 5 | AP (if applicable) | OFF CoP | FSX: Z |

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

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

282. **Go Around Altitude**: Check if the GA has been set correctly according to #262.

283. **BARO – DA (decision altitude):** Please also see #211 – for LFMN ILS 04L according to the charts = 210 feet. At an altitude of 310 feet there will be a call "100 ABOVE".

284. **Autopilot:** Because LFMN ILS 04L is ILS CAT1 we are not allowed to use "AUTOLAND" and have to disconnect the autopilot at latest at the decision altitude of 210 feet.

286. **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.

288. **Thrust Levers: IDLE**: There is a callout: RETARD. A single callout if thrust levers are retarded in time, multiple callouts if not (auto landing = callout at 10 ft, manual landing = at 20 ft).Pull the trust levers

back to IDLE and let the aircraft gently touch the ground.

290. **Trust Levers**: **REV:** After touchdown the thrust reversers (by using F2 from the keyboard) might be activated but not necessarily if noise abatement procedures prohibits it.

291. **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.

295. **REV THRUST:** If REV THRUST is used (#284 and #287) the levers are automatically stowed by the Copilot.

298. **AUTOPILOT:** We switched the autopilot OFF because at LFMN ILS04L = ILS CAT1 we are not allowed to make an "AUTOLAND". But for ILS CAT2 and 3 landing (if the AP is ON) shortly after landing e. g. the plane is still on the centerline the autopilot is automatically switched off and the warning signal goes on. The signal will automatically be switched off by the Copilot.

## 5.23  Go Around

The GO AROUND  flight path is displayed on the ND (in blue) if:

- A missed approach waypoint (MAP in blue) is displayed on the MCDU F-PLAN page (in line 2, 3, 4 and/or 5), while ND is in ROSE or ARC mode or
- Displayed on the MCDU F-PLAN page in line 2, while ND is in PLAN mode.

The GO AROUND procedure is as described below:

- After initialization of the GA „GO AROUND ACTIVE" is displayed on the INFOBAR.
- After reaching GA ALT and the AFTER TO CHECKLIST has been finished "CLIMB OR CONTINUE FOR NEW APPROACH" is displayed on the INFOBAR.
- If additionally to the GA ALT a higher altitude is selected:
  - **Up  to 10.000 ft:** Nothing has to be done and there is no INFOBAR display.
  - **Higher than 10.000 ft:**  The checklist function changes into CLIMB- and after that as usual into CRUISE-, and DESCENT PREP-mode (initialization maybe without delay because no T/D is available). The remaining procedure is according to a normal approach.
- Generally the Approach CL will be initialized after a GA 30 NM and automatically started 25 NM before the destination airport. A message is displayed on the INFOBAR: APPR. CL STARTS IN    x MILES OR MANUALLY START CL …… E. g. it can be manually started using „1" from the keyboard or from the MCDU2  menu itself.
- When the APPR. CL has been finished manually start the MCDU PERF APPR. PHASE (also a respective message appears on the INFOBAR)

| GO AROUND | | | | | | |
|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| A | PEDESTAL | THR LEVER | 4 | GA thrust is  set | SET | Start Checklist / Co-Pilot -  if selected |
| B | PEDESTAL | FLAPS | 8 | "GO AROUND FLAPS" | FLAPS ONE STEP BACK = 3     CoP | FSX: F6 |
| C | | | | | "Positive climb" | Radio Alt >50 ft, VS > 100 ft/min |
| D | MAIN PANEL | GEAR | 7 | "Gear up" | GEAR UP     CoP | FSX: G |
| E | MAIN PANEL | GEAR | 7 | GEAR STOWED | "Gear  up , Flaps 3" | |
| F | PEDESTAL | SPEED-BR. | 6 | GROUND SPOILERS | DISARM     CoP | FSX: / |
| G | OVERHEAD | EXT. LIGHTS | 9 | RUNWAY / NOSE = OFF | „Off"     CoP | |
| H | MAIN PANEL | BRAKES | 6 | AUTOBRAKES | „Off"     CoP | |
| I | | | | At Thrust Red. / Acceleration Alt. | | |
| J | PEDESTAL | FLAPS | 8 | "Flaps 1" | SELECT     CoP | FSX: F6 |
| K | PEDESTAL | THR LEVER | 4 | SET LEVERS TO | "CLIMB THRUST" | Blinking announcement in FMA |
| L | FCU | AP | 5 | AUTOPILOT | ON | |
| M | | | | At "Green Dot Speed" / "S-Speed" | | |
| N | PEDESTAL | FLAPS | 8 | "Flaps up" | SELECT     CoP | FSX: F6 |
| O | | | | | "Flaps up" | Checklist complete |
| P | FCU | AP | 5 | AUTOPILOT 2 | „Off"     CoP | |

A. **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 if there is a problem with the aircraft itself just set the thrust levers to the most forward position = MAN TOGA and this GO AROUND procedure- and checklist will start automatically. Please fly using the procedure and checklist as in the table above.

B.   **"Go Around Flaps":** After this PF call the copilot automatically sets the flaps one position back e. g. in our case as we used FULL: From FULL to 3.

I.   **Thrust Reduction Altitude:** When the THR RED altitude is reached (1.512 feet in our example) a flashing LVR CLB message appears on the FMA (1st column).

J.   **Flaps:** The copilot sets the flaps back to 1. In our case from 3 to 1.

K.   **Thrust Levers:** Move the thrust levers back to the CL detent = THR CLB (FMA displays SPEED because the speed is limited to 200 kts). 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. Take a 10° pitch angle.

L.   **Autopilot:** Because for an ILS CAT 1 landing at LFMN LIS04L we switched the autopilot OFF now the autopilot has be engaged again. If in connection with other landings the autopilot is still set to ON then the PF just confirms the setting.

M.   **Green Dot / S-Speed:** At "Green Dot / S-Speed the PF calls "Flaps up"

O.   **Flaps UP:** The copilot sets the flaps to UP.

P.   **2$^{nd}$ Autopilot:** Automatically set to OFF after the Thrust Reduction Altitude has been reached (if applicable).

Setting the Thrust Levers to MAN TOGA the GA flight path on the ND changes to "green" (in the MCDU too) and becomes active. The plane will climb to 2.000 feet which is the GA altitude for the last GA waypoint = NERAS and automatically follow the GA flight path (for LFMN ILS04L those are the waypoints 320, INTCPT and NERAS). Also automatically the flight path for another approach (including GA) at the same runway is entered into the MCDU on the FPLAN pages. This another approach flight plan is divided from the active flight plan by a F-PLAN DISCONTINUITY and only consists of the final waypoints for ILS04L and does not include any TRANS or VIA waypoints.

As ATC advises us to fly a holding at NERAS at an altitude of 4.000 feet we have to climb from 2.000 (set GA ALT) to 4.000 feet. So change the altitude on FCU ALT to 4000 and push the knob. Then the plane will climb to FL40.

**Descent or Climb-to-Altitude** On the Infobar you will see the following message: CHANGE FCU ALT FOR NEW APPROACH OR START APPROACH CL (MCDU OR KEY 1).



**Picture 75: ND – G/A flight path for LFMN ILS04L**

Before reaching NERAS we will enter a holding into the F-PLAN to wait for further instructions from ATC.

- **MCDU FPLAN**: Scroll to NERAS (should be at the beginning e. g. before the FPLAN DISCONTINUITY) and push the respective LSK L.
- **HOLD**: Push LSK 3L
- **INBOUND COURSE**: Enter 298 according to the aeronautical charts (LSK 1L)

- **DISTANCE**: Enter "/5.0" as distance of the holding (LSK 3L)
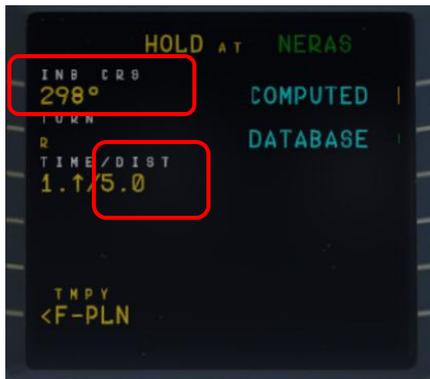


**Picture 76: MCDU – F-PLAN – Entering a holding at NERAS**

- **TEMPORARY F-PLAN**: Push LSK 6L
- **TEMPORARY INSERT**: Insert the TEMPORARY F-PLAN - Push LSK 6R

A "HOLD R" is entered into the FPLAN after NERAS (please see picture below).



**Picture 77:  After entering a holding at NERAS**

Now there are two options to continue the flight:

## A.   Another attempt to land at LFMN ILS04L

- Only the FINAL waypoints for LFMN ILS04L (NI77 and NI51) have automatically been added to the FPLAN.
- But we are advised to use TRANS/VIA "NERAS" again for our approach. So please push LSK6L, then ARRIVAL LSK1R and using LSK2L (VIA) select NERAS. Between F-PLAN DISCONTINUITY and NI77 now the waypoint for the NERAS approach are inserted.



**Picture 78: After entering VIA NERAS for new approach**

- Delete = CLR the FPLAN-DISCONTINUITY between HOLD R and NERAS (first waypoint for another approach at LFMN ILS04L).



**Picture 79:  After deleting F-PLAN DISCONTINUITY**

- If the F-PLAN DISCONTINUITY is not cleared and NERAS (last waypoint of the GA flight path) is reached or HOLD R is left, the FMGS will go into PPOS Mode, where it will revert to Basic AP Modes (HDG and VS/ALT/ALT*).
- EXIT HOLD R: Push the respective LSK R on the F-PLAN page to exit the holding



**Picture 80:  After EXIT the holding**

- Fly another approach.

As in the "real" Airbus there are no ALT/SPD PREDICTIONS available in GA phase. Also, there is no DECEL point calculated and symbol displayed on the ND during GA phase. The APPR PHASE (MCDU – PERF - APPR) has to be manually activated as well as previously the APPROACH CL (MCDU or Key 1). In our case start both after leaving the holding on the way to AZR26.



**Picture 81: ND – After activating flight path for another attempt**

If there is no ALT change to your next waypoint please start the APPR CL manually (MCDU 2 or from the keyboard using "1"). As in our case there is no ALT change between NERAS and AZR26 (= 4.000 feet) so after leaving HOLD R start the APPR CL manually.

**B.  Diversion to another Airport**

Please see chapter 7.2 – Alternate Destinations – for details.

## 5.24  After Landing

| AFTER LANDING | | | | | | |
|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 299 | | | | Ground Speed >35 / Dir. to runway > 15 ° | | | **Start Checklist / Co-Pilot - if selected** |
| 300 | GLARESHIELD | CHRONO | 7 | CHRONO | STOP | | Push upper right button |
| 301 | OVERHEAD | EXT. LIGHTS | 9 | NOSE LIGHTS | ON | CoP | |
| 302 | OVERHEAD | EXT. LIGHTS | 9 | LANDING LIGHTS | OFF | CoP | |
| 303 | OVERHEAD | EXT. LIGHTS | 9 | STROBE LIGHT = OFF or AUTO | If ON = OFF | CoP | |
| 304 | PEDESTAL | TCAS | 10 | TCAS MODE SEL | STBY | CoP | |
| 305 | PEDESTAL | FLAPS | 8 | FLAPS | RETRACT | CoP | FSX: F6 |
| 306 | PEDESTAL | ENGINE | 5 | ENG MODE SEL | NORM | Cop | |
| 307 | PEDESTAL | WXR | 11 | WXR:  SET system to OFF | SET | Cop | |
| 308 | EFIS | FD / ILS | 3 | ILS LOCALIZER (LS) | OFF | CoP | EFIS |
| 309 | OVERHEAD | APU | 10 | APU MASTER and APU START | ON | | |
| 310 | PEDESTAL | SP.BRAKES | 6 | GRND SPLRS | DISARM | CoP | FSX: / |
| 311 | ECAM | WHEEL PAGE | 1 | BRAKE TEMP all wheels = > 300 degrees | CHECK | | **Checklist complete** |

301.  **Exterior Lights**: Set "NOSE" light to „ON".

309.  **APU START:** Becomes available 10 seconds after starting APU MASTER

**AES**    Open the AES (CTRL+SHIFT+W) or GSX (CRTL + F12) window. In AES / GSX select the option "F2 –
**GSX:**   Increment Position" until you see the gate position: A14 and then select "F3 – Request Follow-Me to selected Position". Follow the car. When you are at the gate and have set the parking brakes to ON you will hear "Blocks in position" i.e. you have reached the right position.

## 5.25  Parking

| PARKING | | | | | | |
|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 312 | PEDESTAL | RADIO | 1 | ATC (if no AUTO position) | STBY / OFF | | |
| 313 | OVERHEAD | ANTI-ICE | 8 | ANTI ICE (WING and ENGINES 1&2) | CHECK = OFF | | |
| 314 | PEDESTAL | RADIO | 1 | GROUND CONTACT | ESTABLISH | | If ATC is used |
| 315 | PEDESTAL | P.BRAKE | 7 | PARKING BRAKE ON | SET ON | | FSX: CTRL + . (period) |
| 316 | PEDESTAL | ENGINE | 5 | ENG MASTER 1 & 2 | OFF | | **Start Checklist / Co-Pilot - if selected** |
| 317 | MCDU R | GRND SERV | | CHOCKS | SET | CoP | |
| 318 | PEDESTAL | P.BRAKE | 7 | PARKING BRAKE | OFF | CoP | FSX: . (period) |
| 319 | OVERHEAD | SIGNS | 11 | SEAT BELTS | OFF | CoP | |
| 320 | OVERHEAD | EXT. LIGHTS | 9 | BEACON LIGHT | OFF | CoP | |
| 321 | OVERHEAD | EXT. LIGHTS | 9 | TAXI LIGHT. | OFF | CoP | |
| 322 | OVERHEAD | ANTI-ICE | 8 | WING & ENGINE ANTI ICE = OFF | CHECK | Cop | |
| 323 | OVERHEAD | FUEL | 2 | FUEL PUMPS | OFF | CoP | OFF should appear / **Checklist complete** |
| 324 | MCDU R | GRND SERV | | CONES | SET | | |
| 325 | MCDU R | GRND SERV | | ESTABLISH EXTERNAL POWER | CONNECT | | |
| 326 | OVERHEAD | EXT POWER | 6 | EXT. POWER = AVAILABLE | SET TO ON | | |
| 327 | OVERHEAD | APU | 10 | APU MASTER | SET TO OFF | | |
| 328 | MCDU | MENU | ACFT DOORS | DOORS | OPEN  (AS REQUIRED) | | |

318.  **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.

325.  **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).

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

**AES** Open the AES (CTRL+SHIFT+W) or GSX window (CRTL + F12) and select your options.
**GSX:**

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". A specific information is available in the infobar.

## 5.26 Securing Aircraft

| SECURING AIRCRAFT | | | | | | | |
|---|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 329 | OVERHEAD | ADIRS | | ADIRS (1 + 2 + 3) | OFF | | |
| 330 | OVERHEAD | EXT. LIGHTS | 9 | NAV. LIGHTS | OFF | | |
| 331 | OVERHEAD | SIGNS | 11 | NO SMOKING & EMERGENCY LIGHT | OFF | | |
| 332 | MCDU | MENU | ACFT DOORS | DOORS | CLOSE (AS REQUIRED) | | |
| 333 | OVERHEAD | EXT. PWR | 6 | EXT PWR | AS REQUIRED | | |
| 334 | OVERHEAD | ELEC | 5 | GEN 1 + 2 (Electric Generators) | PRESS | | OFF should appear |
| 335 | PEDESTAL | INT. LIGHT | 3 | INTEG LT | OFF | | |
| 336 | MAIN PANEL | PFD LIGHT | 8 | SWITCH | OFF | | |
| 337 | MAIN PANEL | ND LIGHT | 8 | SWITCH | OFF | | |
| 338 | ECAM | DIMMER | 4 | SWITCH UPPER and LOWER | OFF | | |
| 339 | PEDESTAL | RADIO | 1 | RADIO CONTROL PANEL | OFF | | |
| 340 | PEDESTAL | TCAS | 10 | TCAS = STBY | SET | | |
| 341 | OVERHEAD | BATTERIES | 4 | BAT 1 + 2 | OFF | | |

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

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

## 6.  Vector Approach using DIR TO and RADIAL IN

**Picture 82: Overhead Panel before switching OFF both batteries**

This part of the tutorial uses also the flightplan LOWILFMN01 (Innsbruck to Nice) but covers only the descent from cruise level and the vector approach into Nice = LFMN 04L.  It is mainly based on input from Frank "The Dude" (a RW-pilot) how a RW vector approach is flown into LFMN ILS 04L.

**FLIGHTPATH APPROACH LFMN ILS04L**
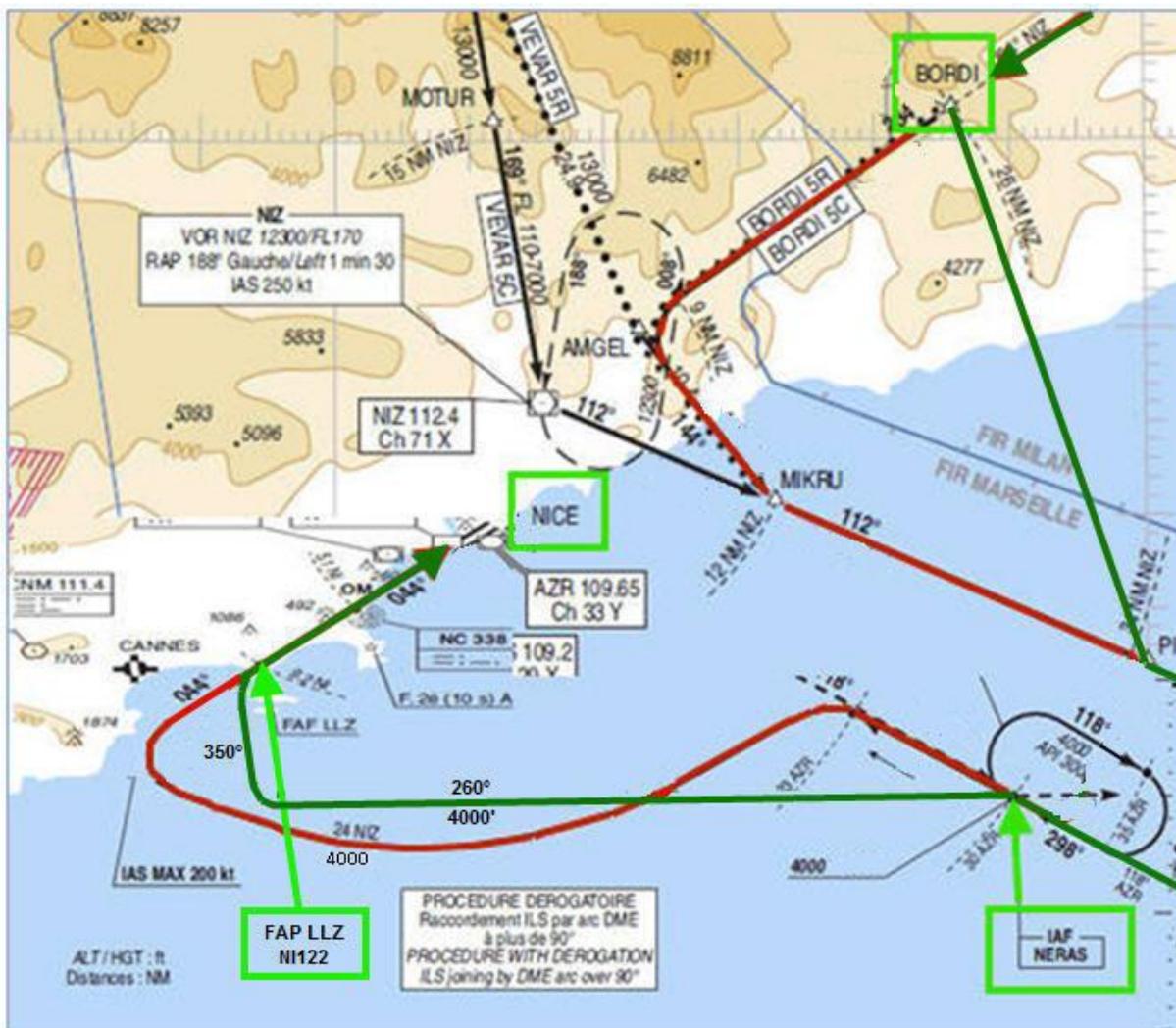


**Picture 83: Vector approach flight path into LFMN**

> ──▶ MCDU F-PLAN
> ──▶ Actual flight path

ATC only makes us leave our cruising altitude when they have some sort of ATC competence boundary where they have to hand us over to somebody else. On our flight to Nice that would be BORDI. This is the ATC border between Italy and France. The French want us in FL170 when entering their airspace. The reason is that Nice outbound planes going towards Italian airspace. So the Italian ATC would clear us well ahead of BORDI.

*After passing EVANO we will receive ATC instructions for descent::*
o    *ATC – AUA319 Cleared FL170 - reach latest at BORDI. Call me leaving*
o    *PM – AUA319 Cleared FL170 - reach latest at BORDI. Will call you when leaving*

Because we are at FL310 this means a descent of 14000' equivalent to app. 42 NM (1000' descent every 3 miles at a V/S of -2500). Adding some "reserve" we should therefore start our descent app. 15 NM before ENOBA.

## 6.1    Prepare the MCDU PERF APPR page



**Picture 84: MCDU PERF APPR page**

## 6.2    20 NM before ENOBA manually start the DESCENT PREPARATION CL



**Picture 85: Start of DESC PREP CL**

6.3    Set the FCU ALT to 17000'.

6.4    15 NM before ENOBA initiate descent to 17000': Push the V/S knob and set the V/S rate to -2500 (FMA = VS -2500)

*Inform ATC that you are leaving your cruise altitude:*
o    *PM – AUA319 left FL310 - descend FL170 at BORDI*
o    *ATC - AUA319 leaving FL310 descend FL170 at BORDI*

6.5    We will reach FL170 app. 5 NM before BORDI

Picture 86: Reaching new FL170 before BORDI

*Reaching BORDI we get further ATC instructions*
o   *ATC – AUA319 Fly DIR TO PIRAM, descend FL080 - reach latest at PIRAM*
o   *PM – AUA319 DIR TO PIRAM, descend FL080 - reach latest at PIRAM*

6.6   Set the FCU ALT to 8000'.
6.7   Initiate descent to 8000': Push the V/S knob and set the V/S rate to -2000 (FMA =        VS -2000)
6.8   MCDU / DIR TO select PIRAM and INSERT


Picture 87: ND after entering PIRAM as DIR TO

*App. before PIRAM (below 10000 feet)*
o   *PM - Nice approach, AUA319 requesting radar vectors ILS04L*
o   *ATC - Roger AUA319 expect radar vectors*
o   *PM -  AUA319, expecting radar vectors*

*Reaching PIRAM we get further ATC instructions*
o   *ATC – AUA319 - direct NERAS, FL040 reach at NERAS*
o   *PM – AUA319 - direct NERAS, FL040 reach at NERAS*

6.9   Enter FL040 into FCU and push the knob (no VS rate necessary because 4000' is already an ALT CSTR
      for NERAS in the F-PLAN (FMA = DES).

**Picture 88: ND after passing PIRAM**

6.10   Transition Altitude = 5.000'

*At NERAS*
o   *ATC - AUA319 turn right HDG 260 remain FL040, radar vectors ILS runway 04L*
o   *PM - AUA319, turning right HDG 260 FL040*

6.11   PF pulls HDG knob on FCU and selects HDG 260
6.12   PF selects MCDU / DIR TO= NI122 (= FAP) and RADIAL IN 224 (044° plus 180°)



**Picture 89: Selecting DIR TO and RADIAL IN**    **Picture 90: ND flight path after DIR TO and RADIAL IN**

6.13   PF pulls HDG knob again to disarm the blue NAV mode in the PFD

*At app. 18 NM ND distance to VOR 2 STP = St. Tropez*
o   *ATC - AUA319 turn right HDG 350 - intercept localizer - cleared ILS 04L*
o   *PM - AUA319 turning right HDG 350 - intercept localizer -cleared ILS 04L*

Picture 91: ND flight path before changing HDG 350°

## 6.14 PF selects HDG 350 on FCU



Picture 92: ND flight path after changing HDG 350°

6.15 Arm the FCU APPR mode by pushing the APPR knob.

6.16 When the approach mode is armed also switch on the second AP.



Picture 93: ND flight path after arming APPR mode

6.17 APPROACH CL starts automatically - after finishing manually activate the MCDU / PERF / APPR PHASE

6.18  The plane turns into the RADIAL IN course



**Picture 94: Approaching RADIAL IN**

6.19  When near the RADIAL IN course the final approach flight path becomes active



**Picture 95: Final Approach Flight Path**

## 7.   Non Precision Approach (NPA)

### 7.1   Introduction

This part is meant to serve as a simple Non-Precision Approach Guide to pilots, unfamiliar with all the tools the airbus provides for such an approach. This part of the guide is written by Joshua (developer) and a real world Airbus A 320 pilot. But still there might be some deviations from Real World Procedures.

There are 3 different procedures to fly an NPA with an Airbus, but for all NPAs the „Bird" is set to ON and used.

**SELECTED MODE**
- **Selected Selected Mode**
  (Vertical and lateral path are selected in the FCU)
- **Selected Managed Mode**
  (Vertical path is selected and lateral path in the FCU is „managed")

**MANAGED MODE**
(Everything is in „managed" mode e. g.  FCU, FMGC and GPS should be „primary", as well as the „accuracy" = set to high)

Additionally it is important, if a **Stabilized Approach** is flown, like Airbus recommends it for an NPA or if a **Decelerated Approach** is used. Both procedures are explained below:

- **Stabilized Approach**:
  VAPP is set as a „speed constraint"  for the FAF (*in our tutorial flight = GAR09)-*  if this is not happened automatically – and the plane then is „fully configured" at this point. This means the procedure to configure the plane for landing starts quite early. Even that Airbus recommends this procedure, most ATC-Controllers do not accept if the plane flies so early already with app. 140kt. This is the reason why in reality the **Decelerated Approach** is the "normal" procedure**.**

- **Decelerated Approach:**
  a. Lateral stabilized,
  b. "APPR PHASE" activated – e. g. flying with "green dot" speed - ,
  c. 3 NM before FAF (*in our tutorial flight = GAR09) =* Flaps set to 1,
  d. 2000 ft AGL = (*in our tutorial flight = MAPT / DMH)*, flaps set to 2, landing gear =  down,  spoilers armed, taxi- and landing lights are switched on,
  e. Below VFE = flaps are set to 3,
  f. Next below VFE = flaps are set to FULL
  g. Landing Checklist
  If the Checklist- and Copilot- functions are switched on the necessary settings for points c to g are automatically made by the PM.

### 7.1.2   Selected Mode:

As the name describes the PF is responsible to „select" the right settings on the FCU. As soon as the plane is "stabilized" (at latest 1nm before FAF = GAR09) the FPA is set to the chosen flight path angle ( -3.4° ) and activated 0.2 - 0.3 NM before FAF.

### 7.1.3.   Managed Mode:

After receiving the „clearance" for the approach, push the  APPR and the TRK/FPA pushbuttons on the FCU. The FMA now should display APP NAV and FINAL in cyan = „armed".  Also the V/DEV („brick") should appear. But this happens only if the LS pushbutton is not set to ON. In case LS is ON the V/DEV

should blink in amber.

To change now to the Final APP Mode the following must be given:
- Before the VIP (vertical interception point) the plane must be vertical as well as lateral stabilized (*in our tutorial flight at GAR09)*.
- The Approach Phase should be activated (happens automatically when passing the „Deceleration Points" which is app. 15nm before the landing or has to be activated manually in the FMGC)
- APP NAV must be engaged and FINAL APP "armed" (see *FCU*)

How to select the „managed" or „selected" mode, you know already e. g. to draw or push the required buttons (drawing = „selected" and pushing = „managed").

Of course the PM assists the PF during the approach by calling the distances as well as altitudes so that it is possible for the PF to check the "glide path". But this is a brief check of the raw data only. At "Minimum" the autopilot is switched off (happens automatically – 50 feet below "Minimum") and the flight is continued visually. If a landing is not possible under those conditions then a GOAROUND has to be performed.

The following short tutorial for a flight from Vienna to Corfu is an NPA in **Managed Mode** and using an **Decelerated Approach**.

## 7.2 Settings / Flightplan used for the Tutorial
We are using the A319 for this flight with a ZFW of app. 48.445 kg (80 passengers and 2.000 kg cargo) as well as a fuel load of 8.575 kg (according to the Load-/Fuel-Planner – in Advanced Mode -).

The flight plan will be as follows:
**Departure:** LOWW (Vienna/Austria) – **Runway:** 16 – **SID:** SASA2B
**Flight:** SASAL – UZ21 – BABIT – UT23 – TADAM – UM127 – VAL – UN732 – PITAS
**Arrival:** LGKR (Corfu/Greece) – **Runway:** 35 = VOR 35-Y – **STAR:** PITAS2J – **TRANS:** DIREX

You can manually enter the flight plan or use the existing one LOWWLGKR01. But after loading there is a F-PLAN DISCONTINUITY between BETAK (end of STAR PITAS2J) and DIREX. Please CLR it.

## 7.3 Weather LGKR
The expected METAR data for our approach at LGKR are as follows:
**Temperature**: 25 degrees C
**Wind**: At 344 degrees at 4 knots
**QNH**: 1010 HPa
Please adjust the FSX weather settings accordingly.

This weather is perfect for using any approach, so we will use VOR35-Y and **STAR** PITA2J (marked in red on the charts you will find in 6.5) and **TRANS** DIREX (marked in blue).

## 7.4 Checklist- and Copilot Function
We suggest using the Checklist as well as Copilot Function for this flight because then you are fully able to concentrate on this NPA procedure.

## 7.5 Charts used for this NPA at LGKR Rwy35
The charts we need for this approach you will find below. Additional charts for this approach can be found here http://www.hvacc.org/site/en/pilots/downloads/charts/category/33-corfu-lgkr

Picture 96: STAR chart (PITAS2J) for LGKR



Picture 97: Rwy35-y VOR chart for LGKR

## 7.6 Approach Brief
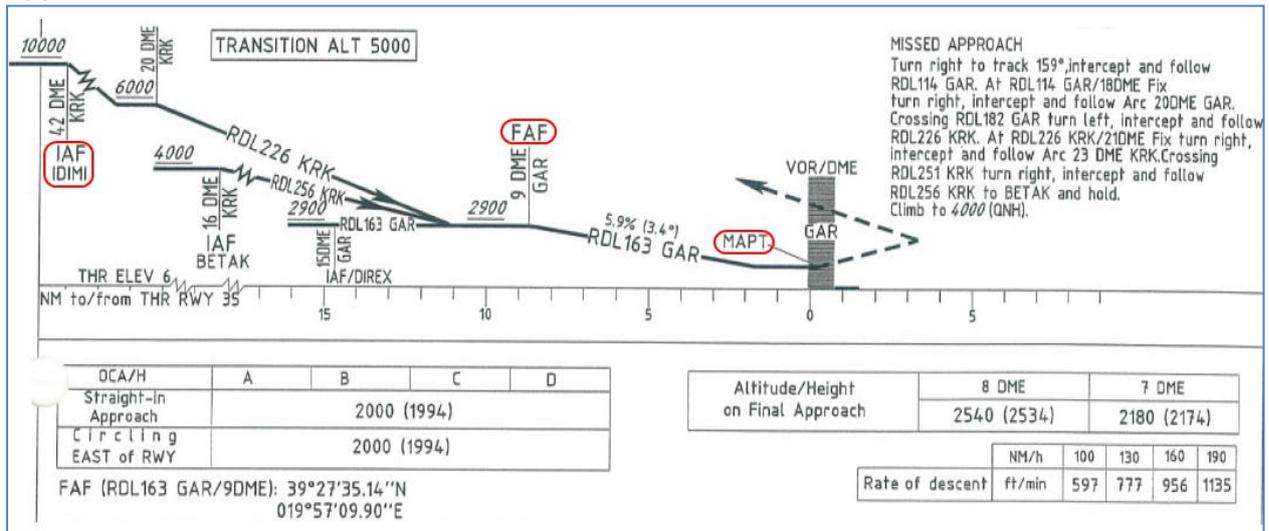


**Picture 98: Vertical information for Rwy35-y for LGKR**

This is the vertical information of the IAC Chart. Take note of the three things circled on the chart, namely **IAF, FAF or VIP**, and **MAPT**.

The approach is divided into three following sections:
1.   **IAF** is the Initial Approach Fix, which denotes the start of *Initial Approach*.
2.   **FAF** is the Final Approach Fix and **VIP** (vertical Interception Point), which denotes the start of Final Approach.
3.   **MAPT** is the Missed Approach Point. At this point, the pilot must GO AROUND if he doesn't have visual with the runway or if the approach is not stable at that point.

Note: DECEL point is usually in-between IAF and FAF.

## 7.7 Required PFD Symbology Knowledge

Before we begin the actual tutorial, you should know the basic PFD symbology that will be used on this approach.



The illustration here on the left hand side of the page explains the Flight Path Vector and Flight Path Director, also known as the FPV/FPD or Birdie. This symbology appears when the pilot selects TRK/FPA on the FCU.

It is important to be able to read, understand and interpret the FPV/FPD in a timely fashion as workload during a NPA can be quite high.
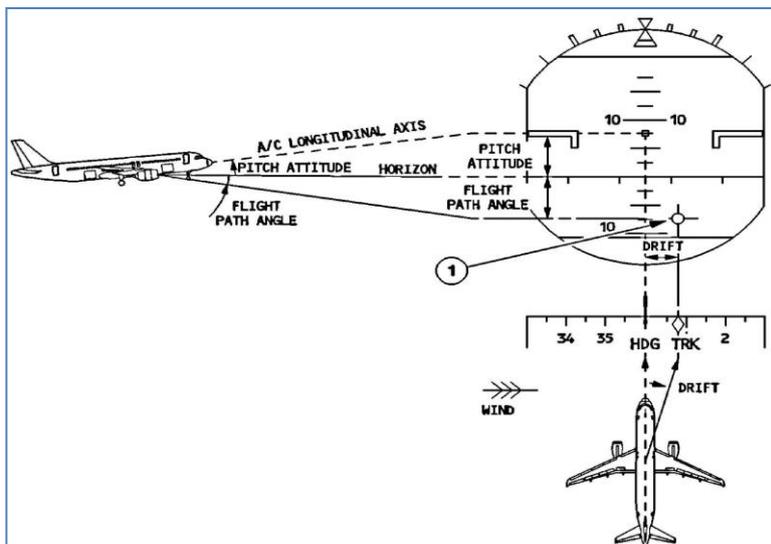
**Picture 99: Flight Path Vector and Flight Path Director 1**
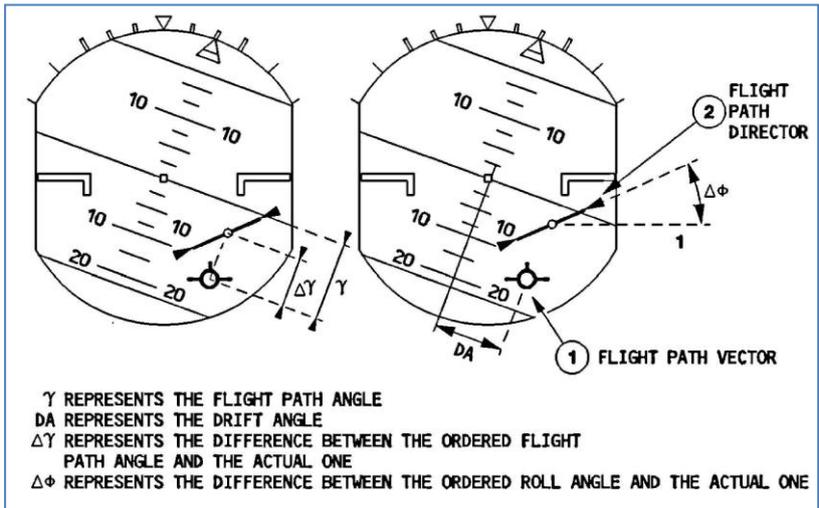
Picture 100: Flight Path Vector and Flight Path Director 2

## 7.8 Descent Preparation and Descent

- Fill in the MCDU PERF Approach Page as follows:



Picture 101: MCDU PERF APPR page

QNH, TEMP and MAG/WIND are according to the expected METAR data (6.3). The transition altitude for LGKR is 5.000 feet and the BARO = MDA (minimum descent altitude) according to the chart = 2.000 feet.

- Set the "to descent to altitude" on the FCU to 2.900 feet = GAR09 where we will start our final approach – but do not yet push the ALT knob.
- You will reach T/D app. a few miles before GRIBA.



Top of Descent (T/D)

Picture 102: Top of Descent

- Reaching T/D start descent by pushing the FCU ALT knob.

**Picture 103: Descent Flight Path**

## 7.9 Initial Approach Fix (IAF)

The IAF for LGKR VOR RWY 35-y is below 10.000 feet (please see chart – picture 67).

At IAF you should already have:
1. Filled in the MCDU Approach Page (6.8).
2. Already briefed on the Missed Approach Procedures.
3. Be cleared by ATC for the approach

When passing the IAF, you should begin to setup your displays to give you the necessary information for your approach. You should (in no particular order):
▪ ARM the APPR as well as the TRK/FPA button on the FCU.



▪ Pressing the TRK/FPA button on the FCU gets the birdie on the PFD.
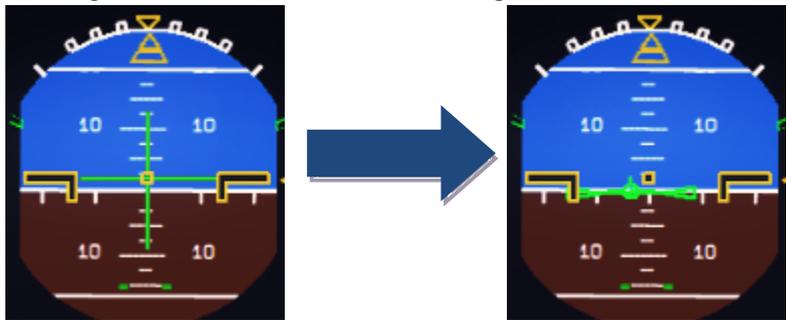
- Switch the ND to Rose Mode = Rose VOR or to Arc Mode and set range to an appropriate range.

Pressing the APPR button will arm the FINAL Mode on the MCDU which will provide FINAL APP vertical and lateral guidance.

Picture 104: After passing 10.000 feet = IAF

## 7.10  Deceleration Point

You will reach the DECEL point app. 3 NM before DIREX

Picture 105: Deceleration Point

After Passing DECEL,

- APPR Phase activates on the MCDU and the VDEV Scale replaces the VDEV magenta dot.
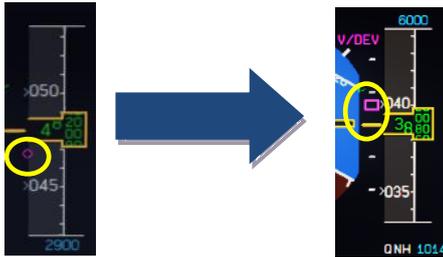


- We highly recommend using the speed brakes after activating the APPR PHASE until the magenta square on the VDEV scale is in the middle of the scale as shown in the picture above.

- ALT and NAV FMA replaced by FINAL APP FMA.





Picture 106: FINAL APP activated after passing DECEL Point



Picture 107: Passing DIREX – Direction GAR09 and LGKR VOR 35-y

- The Copilot should have prepared the plane for the final approach i. e. you are flying already with FLAPS 1. Don't hesitate to use speed brake where deemed neccesary.

## 7.11    Final Approach Fix (FAF)

The FAF for LGKR VOR RWY 35-y is at GAR09 (please see chart – picture 80).



Picture **108: Before FAF = GAR09**



Picture **109: Passing GAR09 = FAF**

After Passing FAF the plane should start to descent following the V/DEV flight path.

- Check that FINAL APP is green on the FMA.
- Check A/THR Mode is SPEED Mode.
- Monitor Position and Flight Path is within acceptable limits.
- ECAM LDG Memo should be green.
- Set GA Altitude. (4000 is set according to the Missed Approach Instructions)

## 7.12    Minimum Decision Altitude (MDA)

At MAP/MDA (which is set to 2.000 feet)
- Check LDG MEMO is all green.
- Approach is stable.
- Visual with runway.

If those conditions are met the captain will announce "LANDING".
- Disconnect AP and proceed to fly manually
- Turn FD off
- Set TRK on the FCU to runway track (=345).

Failure to disconnect AP by MDA will result in automatic AP disconnection at MDA-50 ft. The PFD altitude display after passing the MDA will change to "yellow".



**Picture 110: Manual Approach after passing MDA (ND = ARC mode)**

If decision is to GO AROUND, announce "GO AROUND".
- Set the thrust levers to MAN TOGA
- Set the AP to ON
- Fly the Missed Approach path

If the checklist- and copilot funtions are set ON just follow the checklist……

## 7.13    Summary

| AT | Position | Action |
|---|---|---|
| **IAF** | < 10.000 feet / 11.5 NM -> R256W | Arm APPR and TRK/FPA |
| **D-Point** | app. 7.5 NM before DIREX | V/DEV replaces "magenta dot" and FMA = FINAL APP |
| **FAF/VIP** | At GAR09 | Plane starts to descent automatically |
| **MDA** | At 2.000 feet | Set AP and FD = OFF |

### Remember:
- If you are flying a GA-procedure in connection with an NPA please remember that compared to a normal ILS-Approach below the Minimum Altitude the AUTOPILOT is OFF. So initiating the Go-Around you have to set the AUTOPILOT again to ON.
- The same is valid in case of a new approach for the APPR. Set it to ON when clearing the F-PLAN DISCONTINUITY between the last waypoint of the GA flightpath and the first waypoint of the new FINAL.
- During GA-procedure and in case of a new approach the automatic activation of the MCDU APPR PHASE does not work. It has to be manually activated.  There is also no DECEL-point displayed on the ND.

## 8.    A318 -  Steep Approach

### 8.1    Introduction

This part is meant to serve as a simple A318 Steep Approach Guide to pilots, unfamiliar with all the tools the airbus provides for such an approach. This part of the guide is edited by a real world Airbus A 320 pilot. But still there might be some deviations from Real World Procedures.

**MANAGED MODE**
We are using for this "Managed Mode".

### 8.2    Settings / Flightplan used for the Tutorial

We are using the A318 for this flight with a ZFW of app. 48.228 kg (80 passengers and 2.000 kg cargo) as well as a fuel load of 7.419 kg (according to the Load-/Fuel-Planner – in Advanced Mode -).

The flight plan (using FL 310) will be as follows:
**Departure:**    EDDH (Hamburg/Germany) – **Runway:** 23 – **SID**: WSR9B
**Flight:**    WSR N125 DOBAK UN125 EEL UN872 PAM UL980 XAMAN L980 LOGAN
**Arrival**:    EGLC (London-City/ Great Britain) **Runway**: 27 = ILS27 – **STAR:** SPEA1B

You can manually enter the flight plan or use the existing one EDDHEGLC01. But after loading there is a F-PLAN DISCONTINUITY between SPEAR (end of STAR SPEA1B) and LSR06 (FINAL). Please CLR it.

### 8.3    Weather EGLC

The expected METAR data for our approach at EGLC are as follows:
**QNH:**    1021 HPa
**Temperature:**  20 degrees C
**Wind:**    At 270 degrees at 7 knots
Please adjust the FSX weather or add-on settings accordingly. If you do not know how to do this then just select "Fair Weather" in FSX. This weather is perfect for using runway 27, so we will use ILS27 and **STAR** SPEA1B (marked in red on the charts you will find in 7.5).

### 8.4    Checklist- and Copilot Function

We suggest using the Checklist as well as Copilot Function for this flight because then you are fully able to concentrate on this Steep Approach procedure.

### 8.5    Flight path and Charts used for this Steep Approach at EGLC Rwy27

The flight path and charts we need for this approach you will find below. Additional charts for this approach can be found here http://www.ukvirtual.co.uk/dl/charts/eglc.pdf.

**Picture 111: Flight path EDDH - EGLC**
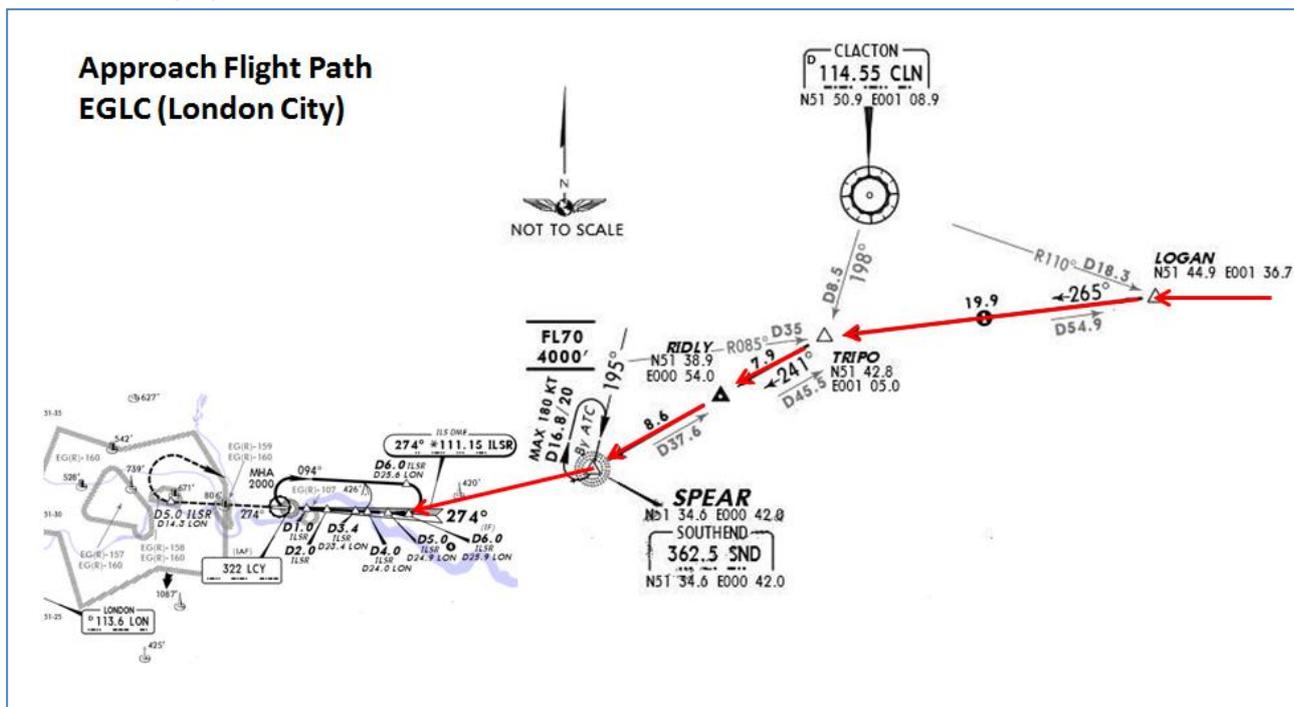


**Picture 112: STAR chart (SPEA1B) for EGLC**

The approach is divided into three following sections:

- **IAF** is the Initial Approach Fix, which denotes the start of *Initial Approach*.
- **FAP** is the Final Approach Point (for ILS landings) and **VIP** (Vertical Interception Point), which denotes the start of *Final Approach*.
- **DA** is the Decision Altitude at which the pilot must GO AROUND if he doesn't have visual with the runway or if the approach is not stable at that point.

Note: DECEL point is usually in-between IAF and FAP.

## 8.6 MCDU PERF APPR PAGE

| NO. | PANEL | | | ACTION | | REMARK |
|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 1 | MCDU | PERF | APPR | QNH, TEMP, MAG WIND | ENTER DATA | |
| 2 | MCDU | PERF | APPR | TRANS ALT | ENTER DATA | = 6000 |
| 3 | MCDU | PERF | APPR | BARO / RADIO | ENTER DATA | = BARO 550 |
| 4 | MCDU | PERF | APPR | VAPP | ENTER DATA | |
| 5 | MCDU | PERF | APPR | LDG CONF | CHECK | |



Picture 113: MCDU PERF APPR page

1.  **QNH; TEMP; MAG WIND:** Enter data (for arrival airport EGLC) according to expected METAR data 7.3. But if you use FSX "Fair Weather" then just enter QNH=1013/TEMP=20/and MAG/WIND=270/0.

2.  **TRANSITION LEVEL:** (TRANS ALT) for EGLC = 6000 feet (because it is different from transition altitude of departure airport EDDH = 5.000) it has to be entered.

3.  **BARO – DA (decision altitude):** According to the chart for EGLC it is a CAT1 ILS approach. Do not get confused by the CAT 3 FMA on the PFD. This FMA only tells you what the airplane is capable of, not what the airport is offering. You can only fly a CAT 3 approach if both the FMA says CAT3 and the airport has a CAT3 ILS.
    As we are flying an ILS CAT1 landing at EGLC we have to enter a Barometric-altimeter DA (decision altitude). Barometric-altimeter MDA/DA is used for NPA, RNAV as well as ILS CAT1 whereas RADIO-altimeter DH (decision height) is used for ILS CAT2 and 3 landings. If there is no manual input a standard BARO value of 200 will automatically be entered by the Copilot. But as the actual BARO-DA value for our arrival airport EGLC (London City) Runway 27 and ILS approach is according to the charts = 550 so please enter this value.
    The information about the available ILS CAT you can get from the charts. The category certification entails a lot of things. The most important one for CAT2 and CAT3 is a monitoring of the validity of the ILS signal and a backup power source. For charts there are a few different formats available but on every ILS chart you will see the capability of the ILS by looking at the minimums. In LIDO charts it is even spelled out CAT 1, Cat 2 etc. On Jeppesen/AIP charts you sometimes have an extra ILS CAT2/3 charts besides the ILS CAT 1 chart.

4.  **VAPP:** It is the final approach speed, will automatically be calculated / inserted by the system and calculated in the following way: VLS plus 1/3 of the tower headwind component. The value of VAPP is limited so that it is never less than VLS + 5 or more than VLS +15. As a result, VAPP is increased above its minimum value for runway headwinds above 15 knots. VAPP correction is not increased further for headwinds exceeding 45 knots.
    For STEEP APPROACH into EGLC it is necessary to add another 3 KTS to the calculated VAPP.

5.  **LDG CONF:** (Landing Configuration) If no value is entered manually it defaults to FULL. For STEEP APPROACH = FULL is required.

## 8.7 Descent Preparation

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 6 | | | | 1 min after CRZ level has been reached | | | **Start Checklist / Co-Pilot – if selected** |
| 7 | | | | SEAT BELTS = ON or AUTO | CHECK and set to ON | Cop | |
| 8 | OVERHEAD | ANTI-ICE | 8 | ANTI ICE = OFF | CHECK | | |
| 9 | PEDESTAL | RADIO | 1 | LANDING INFORMATION | RECEIVED | | If ATC is used |
| 10 | EFIS | A.PRESSURE | 2 | BARO REF = STANDARD | CHECK | Cop | |
| 11 | OVERHEAD | STEEP APPR | 18 | STEEP APPROACH BUTTON | PUSH | | |
| 12 | | | | BRIEFING "STEEP APPROACH" | PERFORM | | |
| 13 | MCDU | PERF. | APPR | AIR PRESSURE ARRIVAL AIRPORT | "Checked" and readout | Cop | QNH= 1021 |
| 14 | MCDU | PERF. | APPR | DECISION ALTITUDE | "Checked" | Cop | BARO = 550 |
| 15 | MCDU | PERF. | APPR | LDG CONF (Flaps) | "Checked" | CoP | **Checklist complete** |

6. **DESCENT PREP. CL:** It now can be manually started 1 min after reaching CRZ LVL. 40 NM before T/D (CRUISE CL still active) – a specific information on the INFOBAR pops up also showing the distance to the automatic start at 10 NM before the T/D. After the checklist has been finished a message on the infobar pops up "INITIATE DESCENT". Initiate descent when the T/D marker on the ND has been reached.

7. **SEAT BELT SIGN :** It is also OK if the switch is set to AUTO

8. **ANTI ICE**: Should be OFF but if ANTI ICE is ON it is also accepted – condition then will be confirmed

10. **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.

11. **STEEP APPROACH button:** Push the button on the Overhead so that it lights up and show ON in green.
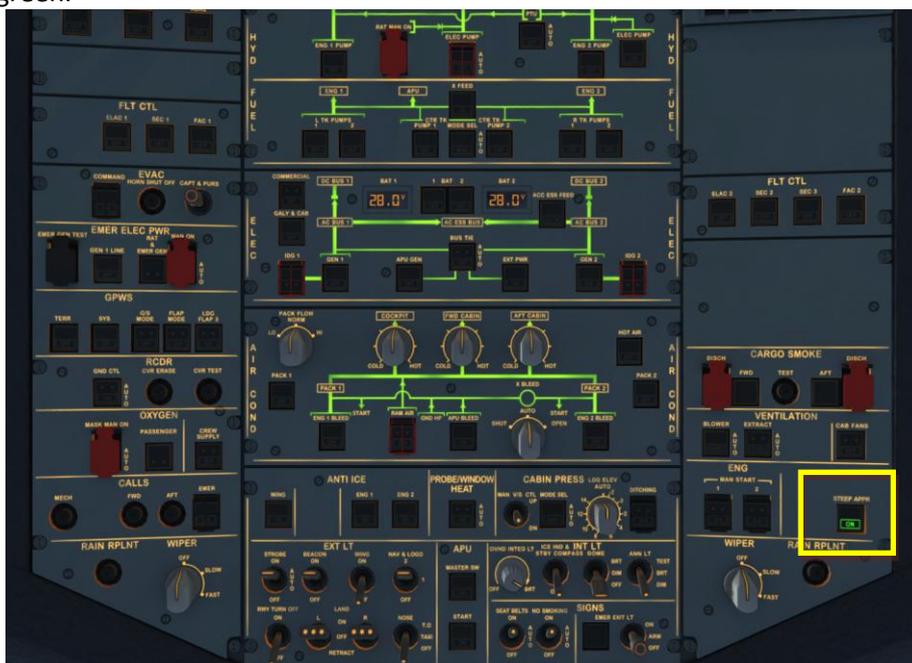


**Picture 114: Overhead Panel and STEEP APPR button**

When this P/B is pressed in, all concerned computers (ELAC, SEC, FCDC, FAC, FMGC, FWC, EGPWS/T2CAS) check if the STEEP APPR function is available. If yes, the P/B 'ON' light illuminates in green, and the green memo 'STEEP APPR' appears on ECAM

Picture 115: UPPER ECAM – Steep Approach Button = ON

12. **Briefing "Steep Approach":** with the following key points:
- Landing configuration (STEEP APPR P/B pushed + Gear Down + CONF FULL + SPD BRKS lever position FULL)
- VLSPFD=VREF+8Kt in steep approach configuration
- Automatic call-outs "Standby / Standby / Flare"
- PM call-out "Flare" at 60ft RA for redundancy with automatic "Flare" call-out at 63ft
- Retard thrust levers to IDLE at flare initiation
- Below 2000ft, Final Approach interrupted for Amber or Red warning except if immediate landing is safer (fire or smoke)
- In case of Go Around, SPD BRKS lever must be retracted by PF (redundant action with automatic retraction)

## 8.8   Descent

| | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| **NO.** | **TYP** | **PART (Name)** | **PART (No.)** | **PF (PILOT FLYING)** | **PM (PILOT MONITORING)** | | |
| 16 | FCU | ALT | 3 | INSERT NEW HEIGHT | **INSERT** | | = 4.000 |
| 17 | FCU | ALT | 3 | INITIATE DESCENT | **PUSH KNOB** | | |
| 18 | MAIN PANEL | PFD | 1 | DESCENT | MONITOR | | |
| 19 | PEDESTAL | SP BRAKES | 6 | SET | AS REQUIRED | | |
| 20 | | | | Vert. Mode = DES / Desc.Prep.CL = compl. | | | **Starts next Checklist / Co-Pilot - if selected** |
| 21 | MAIN PANEL | PFD | 1 | FMA | CHECK | | |
| 22 | PEDESTAL | TCAS | 10 | TCAS = TILT BELOW | CHECK and SET | **CoP** | |
| 23 | | | | At 10.000 feet: | | | |
| 24 | OVERHEAD | EXT. LIGHTS | 9 | LANDING LIGHTS | ON | **CoP** | |
| 25 | EFIS | FD / ILS | 3 | ILS LOCALIZER (LS) | PUSH | **CoP** | EFIS |
| 26 | | | | At Transition Altitude | | | = 5000 |
| 27 | EFIS | A PRESSURE | 2 | BARO REF to actual pressure value | SET / X CHECK | **CoP** | **Checklist complete** |

16. **Descent to Altitude:** **Before the T/D** (Top of Descent) point (near REFSO) is reached (marked on the ND flight path by a white arrow showing down), **the altitude should be set to 2.000 feet**. But do not push the knob before T/D is not reached

17. **Initiating Descent:** There are various methods for descent but we will use:
**Managed Mode:**. Reaching T/D or if the T/D marker disappears or DECELERATE is displayed on the PFD (whatever happens first): Just push 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 116: Top of Descent – Initiate descent**

23. **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. 9 NM before TRIPO.



10.000 feet Deceleration Point

**Picture 117: ND: Deceleration Point**

The IAF (Initial Approach Fix) for EGLC RWY ILS27 is below 5.000 feet e. g. at the waypoint SPEAR. At this point = IAF you should already have:
4. Filled in the MCDU Approach Page (7.6).
5. Already briefed on the Missed Approach Procedures.
6. Be cleared by ATC for the approach

When passing the IAF, you should begin to setup your displays to give you the necessary information for your approach. You should (in no particular order):
- Switch the ND to Rose Mode = Rose NAV or to Arc Mode and set range to an appropriate range.



**Picture 118: Settings for ND mode and range**

24. **LS Pushbutton:** If the button is used (normally when passing 10.000 feet) the "Vertical Glideslope" as well as the "Lateral Localizer" shows up on the PFD. The ND display shows ILS27 on top as soon as the

remaining distance to destination is 250 NM or less.

25. **Transition Altitude**: Setting up the MCDU PERF APPR page we set it to 6.000 feet for the approach (#2). So at this altitude the Barometric Reference Value will be set (as well as on ISIS) .

27. **Baro Ref Cross Check**: The QNH value entered in the MCDU PERF APPR page is used by the copilot. If no value has been entered there then the current ambient pressure value will be used (= keyboard [B]). It is not mandatory to fill the QNH-field in the MCDU – PERF – APPR page. But if a value is entered the unit used (inHg or hPa) must be identical with the settings the FCU – QNH display. If the unit is later changed the value in MCDU PERF APPR page automatically will be adjusted. The FSX standard conversion ratio of 1.013 = 29.92 is used for this baro function.

Like in reality the copilot enters those figures in visible steps and not at once. Then there is a pause of 2 seconds - during which the user can enter a different value – before the checklists continues.



**Picture 119: Descent Profile for RWY ILS27 into LGLC**

## 8.9 Approach

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 28 | | | | 5 NM before DECEL pseudo waypoint | | | **Starts next Checklist / Co-Pilot - if selected** |
| 29 | ECAM | ECAM | 1 | ECAM MESSAGE | CHECK | | |
| 30 | | | | SLIDING TABLE S - STOWED | STOWED | CoP | |
| 31 | OVERHEAD | SIGNS | 11 | CABIN SIGNS = ON | CHECK or set to ON | | |
| 32 | MCDU | PROG | | NAV ACCURANCY | CHECK | | |
| 33 | EFIS | A.PRESSURE | 2 | BARO REF CROSS CHECK | SET and Read out | CoP | **Checklist complete** |
| 34 | | | | **Initial approach:** | | | |
| 35 | OVERHEAD | SIGNS | 11 | SEAT BELTS | CHECK ON | | AUTO is also OK |
| 36 | PEDESTAL | ENGINE | 5 | ENG MODE | CHECK NORM | | |
| 37 | | | | **Approx. 15 NM from touchdown:** | | | |
| 38 | MCDU | PROG | | NAV ACCURANCY | MONITOR | | |
| 39 | MAIN PANEL | PFD | 1 | POSITIONING | MONITOR | | |

28. **Approach CL:** The APPROACH CL now is available for manually start (MCDU2 CHECKLIST MENU = marked in orange) app. 10 NM before the DECEL pseudo waypoint and a message pops up on the INFOBAR showing the distance and explains the start options. It starts automatically app. 5 NM before DECEL pseudo waypoint.



Deceleration Pseudo Waypoint Point

**Picture 120: Decel Point**

For the start of the APPROACH CL it is not necessary anymore that the DESCENT CL has been finished. Even if the BARO CHECK has not yet been completed the APPROACH CL can be started. As a reminder in such a case "DESCENT CL" blinks on the right MCDU.

29. **ECAM Message:** There is a very important difference between caution (amber) and warning (red). If the CLR button is ON it is necessary previously to confirm a "warning" or "caution" message.

30. **Sliding Table:** If the copilots sliding table had been extended at cruise level. Even if the copilots function is set to OFF now the captains and copilots sliding tables will automatically be retracted.

31. **Cabin Signs:** SEAT BELTS=ON or AUTO (if OFF Cop sets to ON), NO SMOKING=ON

33. **Baro Ref Cross Check**: The QNH value entered in the MCDU PERF APPR page is used by the copilot. If no value has been entered there then the current ambient pressure value will be used (= keyboard [B]). It is not mandatory to fill the QNH-field in the MCDU – PERF – APPR page. But if a value is entered the unit used (inHg or hPa) must be identical with the settings the FCU – QNH display. If the unit is later changed the value in MCDU PERF APPR page will be automatically adjusted.
Like in reality the copilot enters those figures in visible steps and not at once. Then there is a pause of 2 seconds - during which the user can enter a different value – before the checklists continues. The FSX standard conversion rate of 1.013 = 29.92) is used for this baro function.

## 8.10 Final

There are two main modes for the approach: Using "Managed Speed" or "Selected Speed (manually)". Our Checklist- and Copilot-Function 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).
The Final CL activation is "independent" from the activation of the MCDU – PERF – APPR mode activation. The FINAL checklist will be automatically started after the APPR CL has been completed.

| FINAL | | | | | | | |
|---|---|---|---|---|---|---|---|
| NO. | PANEL | | | ACTION | | | REMARK |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 40 | | | | Appr. CL has been completed | | | Starts next Checklist / Co-Pilot -  if selected |
| 41 | MCDU | PERF | | APPR PHASE | ACTIVATE | CoP | |
| 42 | | | | Green Dot Speed | | | |
| 43 | PEDESTAL | FLAPS | 8 | FLAPS 1 | SELECT | CoP | FSX: F7 |
| 44 | | | | S-Speed | | | |
| 45 | EWD | STATUS | 4 | Rad. Alt. > 2.100 ft = LANDING MEMO | | | |
| 46 | PEDESTAL | FLAPS | 8 | FLAPS 2 | SELECT | CoP | FSX: F7 |
| 47 | MAIN PANEL | GEAR | 7 | L/G DOWN | SELECT | CoP | FSX: G |
| 48 | MAIN PANEL | PFD | 1 | CALL: LOCALIZER ALIVE | | | |

| 49 | FCU | APPR | 6 | APPR | PUSH | | |
|---|---|---|---|---|---|---|---|
| 50 | MAIN PANEL | PFD | 1 | CALL: LOCALIZER CAPTURED | CHECK | | |
| 51 | | | | When L/G down, below REF SPEED | | | |
| 52 | PEDESTAL | FLAPS | 8 | FLAPS 3 | SELECT | CoP | FSX: F7 |
| 53 | | | | Next REF SPEED: | | | |
| 54 | PEDESTAL | FLAPS | 8 | FLAPS FULL | SELECT | CoP | FSX: F7 / Checklist complete |
| 55 | PEDESTAL | SPEED-BR. | 6 | GROUND SPOILERS / SPEED BRAKE | FULL | CoP | |
| 56 | FCU | ALT | 4 | GO AROUND ALT | SET TO 2.000 FEET | CoP | Just enter - do not push knob |
| 57 | OVERHEAD | EXT. LIGHTS | 9 | NOSE LIGHT (if not TAXI) | ON | CoP | |
| 58 | MAIN PANEL | EWD | 5 | LANDING MEMO | CHECK NO BLUE | | |
| 59 | FCU | SPD | 1 | Set speed to VApp | SET | | = 135 (MCDU – PERF – APPR page) |
| 60 | PEDESTAL | TCAS | 10 | TCAS | SET TO „TA ONLY" | | |
| 61 | MAIN PANEL | PFD | 1 | CALL: GLIDESLOPE ALIVE | | | |
| 62 | MAIN PANEL | PFD | 1 | CALL: GLIDESLOPE CAPTURED | CHECK | | |
| 63 | MAIN PANEL | PFD | 1 | FMA | CHECK | | |
| 64 | MAIN PANEL | PFD | 1 | LOC / GS CAPTURE | MONITOR | | |
| 65 | ECAM | ECAM | 1 | ECAM WHEEL PAGE | CHECK | | |
| 66 | FCU | ATHR | 7 | A/THR | CHECK SPD | | |
| 67 | OVERHEAD | ANTI-ICE | 8 | WING ANTI ICE | CHECK OFF | | |

For the first waypoint (LSR06) of the FINAL waypoints into EGLC ILS RWY27 there is a speed constraint of 160 KTS. To comply with this constraint the speed just after passing SPEAR and before activation of the approach phase is already reduced to "Green Dot" speed (197 KTS). After "Green Dot" has been reached the flaps are set to 1 and the speed is reduced to S-Speed of 172 KTS. To further reduce the speed Flaps 2 are set and the plane starts to decelerates again to F-speed =136 knots. But because of the speed constraint at LSR06 of 160 knots we use "Selected Speed" e. g. draw the FCU SPD knob and set it to 160. After passing LSR06 please change the speed to 135 knots VAPP (please see #59 for details). This procedure is different from the normal procedure as stated below.

41. **Initiate Approach Phase:**
   After the APPROACH CL has been finished the APPR PHASE in the MCDU PERF APPR page immediately should be manually activated (RW procedure).
   If the MCDU F-PLAN DECEL pseudo waypoint (calculated by the FMGC to initiate deceleration in order to be stabilized at VAPP at a specified point on the approach profile, normally at 1000 feet AGL) is different from the point at which the APPR PHASE automatically will be initiated (7.200 feet radar altitude), it is ILS or NPA approach and distance to the airport less than 30 NM) a warning will appear on the INFOBAR "MCDU: Manually activate APPR PHASE".

   - **Manually** activated by the user (MCDU – PERF - APPR page) if warning appears on the INFOBAR "MCDU: Manually activate APPR PHASE". In the "real world" the APPR PHASE is always activated manually and **never** automatically.
   - **Automatically** at the Deceleration Pseudo Waypoint (please see picture below) if the APPROACH CL has been finished; the flight level is below 7.200 feet radar altitude, the RNAV mode is active and the distance to the airport is less than 30 NM. The (DECEL) pseudo waypoint is calculated by the FMGC to initiate deceleration in order to be stabilized at VAPP at a specified point on the approach profile, normally at 1000 feet AGL.

**Picture 121: Deceleration Point**

42. **Green Dot Speed / CLEAN:** After initiating the APPR Phase (#41) automatically the MCDU reduces the speed to "Green Dot Speed" (197 knots).

43. **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 – The flaps will be extended to 1 at least automatically 10 NM before the runway threshold if IAS is below VFE.

44. **S-Speed:** After the flaps are deployed by the Copilot to 1 the MCDU automatically reduces the speed to S-Speed (172 knots). If the plane does not slow down to S-Speed then just use the speed brakes until S-Speed is reached.

45. **Landing Memo:** The conditions for the Landing Memo are:
    - < 2100 feet RA above runway altitude for STEEP APPROACH
    - Flight mode: Cruise or Approach
    - Both thrust levers at or below CL detent

    The "LANDING" checklist is "interrupted" until the "Landing Memo" becomes available in the Upper ECAM. The Copilot then continues with the settings i. e. flaps 2, gear down etc.

46. **Flaps 2:** At calculated speed (but must be lower than VFE = 200 knots) the flaps are automatically extended to 2 by the copilot (if = ON). If the calculated flaps 2 extension speed is higher than VFE the plane must be near MLW or even above. This means it is an emergency situation. In such a case do not use "Managed Speed", but set the speed manually to a value below VFE = 200 knots (e.g. 195 knots). The flaps then will be automatically extended by the copilot (if = ON). After the flaps have been extended to 2 you can again use "Managed Speed" for landing.

48. **LOC Alive:** Before LSR06 the localizer becomes "alive" and this will be confirmed by a PM call "LOCALIZER ALIVE". The conditions for this call are: The angle to the runway must be smaller than 90 ° and the Approach, Landing as well as BaroCheck are not active.



**Picture 122: FINAL Flight Path**

49. **APPR Button:** Before passing LSR06 (you are already flying at LSR34) and after hearing the call "LOCALIZER ALIVE" = press the APPR button on the FCU.

50. **LOC Capture:** The "capture" will be confirmed i.e. lateral path has been caught. Please note: If you are pushing the APPR button too early (before turning to LSR06/LSR34) it might happen that the plane captures the localizer in the wrong direction. Please see also chapter 9.4 for details. First the lateral path will be caught (LOC* or LOC displayed on the PFD -FMA)

55. **GROUND SPOILERS:** For STEEP APPROACH it is necessary to set the Ground Spoilers (Speed Brakes) to FULL.

56. **GoAround ALT:** 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. Set the GoAround Altitude according to the FPLAN e.g. change the set altitude on the FCU to the altitude to be reached after a "Go Around". Please just change the altitude and do **not** press or pull the knob at this point. In case the Copilot function is enabled it is automatically set by the copilot under following conditions:

   - FAF passed - plus 0.5 NM added
   - Actual flight level below GA ALT
   - Actual flight level below FCU set ALT
   - Vertical speed below 250 knots

   If the copilot function is set to ON the highest value is automatically inserted using the MCDU FPLAN data. The value will be entered by the copilot in visible steps (with sound) and also considering the 100 and 1000 switch. Some values like 3.490 feet cannot be entered so the next possible higher value which means for 3.490 = 3.500 has to be or are entered.

   If no values are available in the F-PLAN or there is no GA flight path available in the NAV DB the copilot sets the value to a value of (airport altitude rounded to next full 1.000) plus 4.000 feet e. g. normally to 5.000 feet.

58. **Landing Memo** / **blue entries - :** Please check if there are no "blue" entries in the Landing Memo. If for some reasons there are still "blue" entries (you might have forgotten to make certain settings) then please make those settings now.



*Picture 123: Landing Memo – Steep Approach*

59. **Set VAPP:** 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 130 as calculated by the FMGC – MCDU (PERF APPR) or manually adjusted like in our case for a STEEP APPROACH (please also see #4). As we are flying in "Managed Mode" the speed automatically is reduced to Vapp after the flaps are set to FULL – i.e. nothing has to be done in "Managed Mode".

   But using this speed of 130 knots we would be very near Alpha Protection and PFD VLS. We therefore suggest (like it would be done in "real life") to use "selected speed" mode e.g. draw the FCU SPD knob and set it to 135 knots instead.

   It is the final approach speed and automatically be calculated / inserted by the system. It is calculated in the following way: VLS plus 1/3 of the tower headwind component. The value of VAPP

is limited so that it is never less than VLS + 5 or more than VLS +15. As a result, VAPP is increased above its minimum value for runway headwinds above 15 knots. VAPP correction is not increased further for headwinds exceeding 45 knots. No additions are made for gusts.

61. **Glideslope "alive":** When the Localizer has been captured (please see picture #70 above) soon after the vertical glide slope becomes "alive" (magenta rhombus fully appears) which will be confirmed by a call.

62. **Glideslope "captured":** When the glideslope has been captured it will be confirmed by a call.
The middle of both PFD fields shows the vertical and lateral position of the aircraft where as the magenta rhombus shows the actual position on the glide path. This means that during the approach both rhombuses are moving to the center. 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 124: G/S captured – LS view**

66. **Auto Throttle**: Leave the A/THR on…..
67. **Wing Anti Ice**: Leave the Wing Anti Ice OFF

## 8.11  Landing

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
|  | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 68 |  |  |  | Flaps in Landing Config. (MCDU Settings) |  |  | Start next Checklist / Co-Pilot -  if selected |
| 69 | MAIN PANEL | GEAR | 7 | LAND. GEAR = FULL EXTRACTED | CHECK | CoP |  |
| 70 | PEDESTAL | SP. BRAKEs | 6 | GROUND SPOILERS = FULL | CHECK | CoP | FSX: Right mouse click |
| 71 | MAIN PANEL | AUTO BRAKE | 6 | AUTO BRAKES = MEDIUM | SET | CoP |  |
| 72 | OVERHEAD | EXT. LIGHTS | 9 | NOSE = TO or TAXI / LANDING L.  = ON | CHECK | CoP |  |
| 73 | FCU | ALT | 3 | GO AROUND ALT | CHECK | CoP |  |
| 74 |  |  |  | BEFORE OR AT DECISION ALTITUDE |  |  |  |
| 75 | FCU | AP | 5 | AP | OFF | CoP | FSX: Z |
| 76 |  |  |  | CALL: STANDBY – STANDBY - FLARE |  |  |  |
| 77 |  |  |  | At 60 feet: (PM CALL = FLARE") |  |  |  |
| 78 |  |  |  | FLARE | PERFORM |  |  |
| 79 | PEDESTAL | THR LEVER | 4 | THRUST LEVERS | IDLE |  | FSX: F1 |
| 80 |  |  |  | At touchdown: |  |  |  |
| 81 | PEDESTAL | THR LEVER | 4 | REV | MAX |  | FSX: F2 |
| 82 |  |  |  | BRAKES | AS REQUIRED |  |  |
| 83 |  |  |  | At 70 knots: |  |  |  |
| 84 | PEDESTAL | THR LEVER | 4 | REV | IDLE |  | FSX: F1 |
| 85 |  |  |  | At taxi speed: |  |  |  |
| 86 | PEDESTAL | THR LEVER | 4 | REV | STOW | CoP |  |
| 87 |  |  |  | Before 30 knots: |  |  |  |
| 88 | MAIN PANEL | AUTO BRAKE | 6 | AUTOBRK | DISENGAGE | CoP | Checklist complete |

70. **Ground Spoilers:** Speed Brakes should already be set to FULL (see #55)
71. **Auto Brake**: Set to MED (medium)
72. **Exterior Lights**: Just check if all Exterior Lights are on: Strobe, Beacon, Nav & Logo as well as Landing Lights.

73. **Go Around Altitude**: Check if the GA has been set correctly according to #56.
74. **BARO – DA (decision altitude):** Please also see #3 – for EGLC ILS 27 according to the charts = 550 feet. At an altitude of 650 feet there will be a call "100 ABOVE".
75. **Autopilot:** Because EGLC ILS27 is ILS CAT1 we are not allowed to use "AUTOLAND" and have to disconnect the autopilot at latest at the decision altitude of 550 feet.
76. **Standby – Standby – Flare:** Beginning at 130 feet start automatic call-outs "Standby / Standby / Flare" confirmed by the PM at 60 feet. Initiate FLARE at those calls e. g. at 55 feet.
77. **PM CALL "Flare":** At 60 feet redundant to the automatic call at 63 feet the PM confirms with "Flare".
78. **LAND and FLARE mode:** As the aircraft gets closer to the ground the LAND mode engages. The actual modes are shown on the FMA. Flare has to be initiated manually at 55 feet.
79. **Thrust Levers: IDLE**: There is a callout: RETARD (for SPEED APPROACH at 60 feet ). A single callout if thrust levers are retarded in time, multiple callouts if not. Pull the trust levers back to IDLE at flare initialization and let the aircraft gently touch the ground.
81. **Trust Levers**: **REV:** After touchdown the thrust reversers (by using F2 from the keyboard) might be activated but not necessarily if a noise abatement procedure prohibits it.
82. **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.
86. **Thrust Levers: STOW:** If REV THRUST is used (#81 and #84) the levers are automatically stowed by the Copilot.

## 9. Alternate Company Routes and Destinations

### 9.1 Alternate Company Routes

An alternate company route is a flightplan (company route) from the primary destination to an alternate destination. The format and the location where those flightplans are saved are identical with those of primary flightplans.

For our tutorial we use as a primary flightplan EDDFLOWG01 e.g. from EDDF (Frankfurt/Germany) to LOWG (Graz/Austria). As alternate flightplan we will use LOWGLOWW01 e. g. from LOWG (Graz/Austria) to LOWW (Vienna/Austria).

Load the primary flight plan EDDFLOWG01 and then on the MCDU INIT A page enter LOWW into the scratchpad and then push LSK 2R.



**Picture 125: Entering ALTN destination – step 1**

This following page displays all the existing flightplans from LOWG to LOWW. Please select LSK 1L.



**Picture 126: Entering ALTN destination – step 2**

The MCDU INIT A page then looks as follows:

Picture 127: Entering ALTN destination – step 3

Now the two flightplans are loaded and can be reviewed on the F-PLAN pages. The primary flightplan is displayed in "green" whereas the GA waypoints and the alternate flightplan are displayed in "blue. Both flightplans are separated by ------ END OF F-PLAN -------.

If for any reason ATC informs you that the airport in Graz is closed and you receive the ATC-permission to divert at the revise point of ALMER to LOWW = Vienna. The information could be like *"Cleared to divert to LOWW, from ALMER direct to NERDU and use approach transition NER5L for runway 16".* Then do the following: Scroll in the primary flightplan to the waypoint of ALMER and push the LSK L (in following screenshot = LSK 3L).


Picture 128: Enabling ALTN DEST – step 1

Enable the alternate destination by pushing LSK 4L.


Picture 129: Enabling ALTN DEST – step 2

Then the following screen opens:

Picture 130: Enabling ALTN DEST – step 3

Enter NERDU into "NEXT WPT" and push LSK3R



Picture 131: Entering NERDU as NEXT WPT after the revise point ALMER

Automatically you are then back to the temporary flightplan page.

If at any enroute waypoint of the active flightplan (except FROM) the alternate flightplan is enabled (please see the picture #89) – the flightplan shrinks to:

- Active route until the revise point = ALMER in our example
- Waypoint entered as next waypoint = NERDU in our example
- **F-PLAN DISCONTINUITY**
- Complete alternate company route



Picture 132: Temporary flight plan after enabling ALTN

If another waypoint is entered after the revise point = ALMER and before the F-PLAN DISCONTINUITY (in our example = NERDU) and this waypoint is also part of the alternative company route then the flightplan

collapses. E. g. all waypoint of the alternate company route until this waypoint (= NERDU) are automatically deleted.
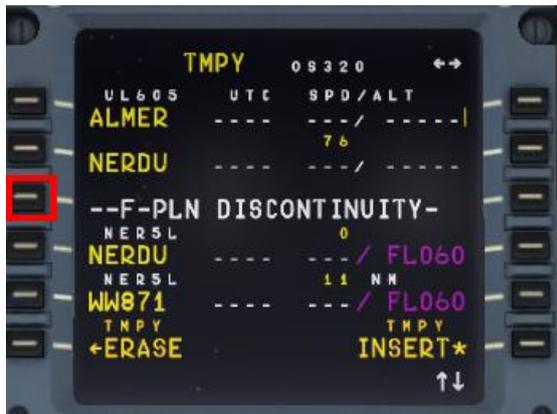


**Picture 133: Temporary F-PLAN after matching with ALT RTE**

Clear the F-PLAN DISCONTINUITY (LSK 3L) and insert this temporary flightplan (LSK 6R). The alternate flightplan now becomes the active primary flightplan.



**Picture 134: Primary F-PLAN**

## 9.2 Alternate Destinations

If no ALT CO RTE is available (or we do not want to use it) we just work with ALTN destination.

- Load the primary flightplan EDDFLOWG01
- Enter "LOWW" into the MCDU INIT A page as ALTN = LSK 2R



**Picture 135: Entering ALTN DEST = LOWW**

- As we will not use the existing ALTN CO RTE "LOWGLOWW01" please just go back to the INIT A page (
(=RETURN LSK 6L).
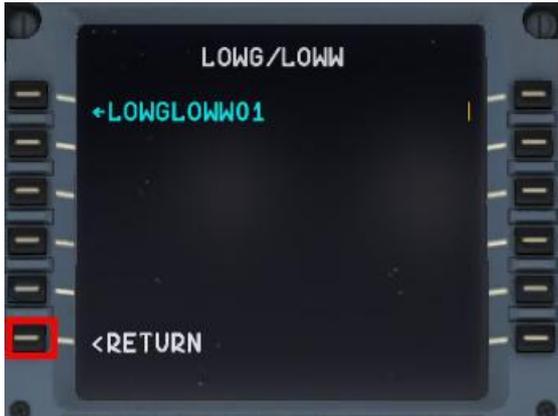


**Picture 136: Not using existing CO RTE**

- The INIT A page then looks as follows



**Picture 137: INIT A page with ALTN destination**

Now the two flightplans are loaded and can be reviewed on the F-PLAN pages. The primary flightplan is displayed in "green" whereas the GA waypoints and the alternate flightplan (or just destination) are displayed in "blue. Both flightplans are separated by ------ END OF F-PLAN -------. The alternate flightplan LOWG to LOWW is also separated by a -----F-PLAN DISCONTINUITY ------ because no waypoints etc. are yet defined.

If for any reason ATC informs you that the airport in Graz is closed and you receive the ATC-permission to divert at the revise point of ALMER to LOWW (Vienna) the information will be like *"Cleared to divert to LOWW, from ALMER direct to NERDU and then use transition NER5L for runway 16"*. Then do the following: Scroll in the primary flightplan to the waypoint of ALMER and push the LSK L (in following screenshot = LSK 3L).



**Picture 138: Enabling ALTN DEST – step 1**

Enable the alternate destination by pushing LSK 4L.



Picture 139: Enabling ALTN DEST – step 2

Then the following screen opens:



Picture 140: Enabling ALTN DEST – step 3

Go back to the F-Plan and use TMPY INSERT = LSK 6R. The alternate flightplan now becomes the active primary flightplan.

If at any enroute waypoint of the active flightplan (except FROM) the alternate flightplan is enabled (please see the picture #98) – the flightplan shrinks to:
- Active route until the revise point = ALMER in our example
- **F-PLAN DISCONTINUITY**
- Alternate destination = LOWW



Picture 141: Active flight plan after enabling ALTN

Select the ARRIVAL for LOWW (LSK 6L) = ILS16 – no STAR – but just transition for runway 16 = NER5L and insert the temporary flightplan (LSK 6R).

**Picture 142: LOWW ARRIVAL**

Delete the F-PLAN DISCONTINUITY



**Picture 143: Active F-PLAN (before CLR)**

Final active flightplan EDDF (primary departure) – LOWW (alternate destination)



**Picture 144: Active F-PLAN EDDF - LOWW**

## 10.  Tips and Tricks:

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

### 10.2  Keeping / saving adjusted views

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

### 10.3  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://vatroute.net 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 A318/319/320/321 types.

### 10.4  „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 145: 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 72) press APPR (to also catch the vertical glide path) and prepare for a smooth landing.



Picture 145: Angle „capturing" a glide path

## 10.5 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 A318_A319 (or Airbus A320_321) / 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.

## 10.6 MCDU (left only) on an external device

To use the web interface start AirbusXConnectExtended.exe that is located in FSX Main Folder\Aerosoft\Airbus A318_A319 (or Airbus A320_321). You can do this before starting FSX or later. It will open a small window showing you the ip address and the port, something like this: 123.123.123.123:4040. You can enter this address into the address bar of the browser on any device that is connected to the same network. It will open showing the MCDU and you can use it as you would in the aircraft.

## 10.7 Use of the Procedure and Checklist

After using this tutorial and flying the Aerosoft Airbus A318/319/320 or 321 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 11.

## 10.8 Manually entered waypoints

It is possible to manually enter waypoints (FIXES) which are not available in the Navigation DB. If you enter a waypoint which is not available in the DB a new MCDU window opens. Enter the values for latitude and longitude into the scratchpad and then push LSK 2L.



**Picture 146: Manually entered waypoints**

The following formats are possible to enter:

| 54.14.19N 002.58.51W | = **5414.2N/00258.5W** | |
| 54.235333,-2.971667 | = **54.2N/2.9W** | + LAT=N/-LAT=S/+LONG=E/-LONG=W |
| n54 14.2 w002 58.5 | = **N5414.2/W00258.5** | |

# 11.  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 |

## 12. Checklists and Procedures A 319 CFM

### 12.1 Basic Preparation Procedure (aircraft in COLD DARK state)

**BASIC PREPARATION PROCEDURE**

| NO. | PANEL | | | ACTION | | REMARK |
|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 1 | FUEL PLANNER | ADV. METH. | | PAX-, CARGO- and FUEL LOAD | SET and GEN. LOADSHEET | Please see chapter 4.1 for details |
| 2 | MCDU R | MAIN MENU | ACFT STATE | COLD DARK = 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 |
| 16 | MCDU R | LOAD/FUEL | | INIT LOADSHEET or manually enter data | | |
| 16 | MCDU R | LOAD/FUEL | | LOAD to PLANE | | LOAD INSTANT or separately |

### 12.2 Cockpit Preparation

**COCKPIT PREPARATION**

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | TA | |
| 17 | MCDU | MAIN MENU | CHECKLIST | A = PUSH LSK3L | PUSH | | Start Checklist / Co-Pilot - if selected |
| 18 | OVERHEAD | ELEC | 3 | BAT 1 + 2 (Batteries) | CHECK ON (BOTH) | Cop | |
| 19 | OVERHEAD | ELEC | 6 | EXT PWR (External Power) | ON | CoP | (if available – see MCDU MENU / DOORS) |
| 20 | OVERHEAD | EXT. LIGHTS | 9 | NAV. LIGHTS | CHECK ON | CoP | |
| 21 | PEDESTAL | ENG | 5 | ENG MASTER 1 + 2 | CHECK OFF | CoP | TA | |
| 22 | PEDESTAL | ENG | 5 | ENG MODE SEL | CHECK NORM | CoP | TA | |
| 23 | ECAM | LAND GEAR | 2 | LANDING GEAR LEVER | CHECK DOWN | CoP | |
| 24 | PEDESTAL | P. BRAKE | 7 | PARKING BRAKE | CHECKED = OFF | CoP | TA | |
| 25 | PEDESTAL | FLAPS | 8 | FLAPS LEVER | CHECK POSITION = 0 | CoP | |
| 26 | PEDESTAL | SP. BRAKE | 6 | SPEED BREAK LEVER | CHECK RETR. / DISARMED | CoP | |
| 27 | PEDESTAL | THR LEVER | 4 | THRUST LEVERS | CHECK IDLE | | TA | |
| 28 | PEDESTAL | RADIO | 1 | TRANSPONDER MODE | CHECKED STANDBY | | |
| 29 | PEDESTAL | RADIO | 1 | RADIO CONTROL PANEL | ON | CoP | |
| 30 | ECAM | ECAM | 5 | ECAM RECALL (RCL) BUTTON | PRESS | CoP | TA | |
| 31 | MAIN PANEL | ANTI SKID | 10 | ANTI SKID | CHECK ON | CoP | TA | |
| 32 | MAIN PANEL | EFIS | 3 | FLIGHT DIRECTOR | CHECK ON | CoP | |
| 33 | OVERHEAD | SIGNS | 12 | EMERGENCY LIGHTS | ARM | CoP | TA | |
| 34 | OVERHEAD | SIGNS | 12 | NO SMOKING SIGNS | ON | CoP | TA | |
| 35 | OVERHEAD | SIGNS | 8 | WING & ENGINE ANTI ICE | CHECK OFF | Cop | |
| 36 | OVERHEAD | PR.WI. HEAT | 13 | PROBE WINDOW HEAT | AUTO/OFF | | |
| 37 | OVERHEAD | AIR COND. | 7 | HOTAIR, ENG. BLEED L+R, PACKS L+R | CHECK ON | Cop | TA | (no white signs) |
| 38 | OVERHEAD | VENTILATION | 14 | BLOWER, EXTRACT, CAB. FANS | CHECK ON | | TA | (no white signs – INOP not animated) |
| 39 | OVERHEAD | ELECTRIC | 5 | ENG. GENERATOR L+R | CHECK ON = FAULT | Cop | |
| 40 | OVERHEAD | ELETRIC | 5 | APU GENERATOR | CHECK ON | | (only if EXT. POWER is ON) |
| 41 | OVERHEAD | FUEL | 2 | ALL FUEL PUMPS | PRESS | CoP | TA | OFF should disappear |
| 42 | OVERHEAD | FUEL | 2 | ALL FUEL PUMPS = ON | CHECK | | |
| 43 | OVERHEAD | HYDRAULICS | 1 | ACCU BREAK PRESS: ELEC. PUMP | (ON) | | See explanation |
| 44 | OVERHEAD | GPWS | 15 | GPWS: ALL SWITCHES | CHECK ON | Cop | (no white signs) |
| 45 | OVERHEAD | EFCS | 16 | EFCS: ALL SWITCHES | CHECK ON | Cop | (no white signs) |
| 46 | OVERHEAD | ADIRS | 17 | ADIRS (3x) | ON | CoP | TA | |
| 47 | COCKPIT | EM.EQUIPMENT | | ALL EQUIPEMT AVAILABLE AND OK | CHECK ON | | Checklist complete |
| 48 | PEDESTAL | RADIO | 1 | SET FREQUENCIES | SET | | If ATC is used |
| 49 | PEDESTAL | RADIO | 1 | ATC CLEARANCE | OBTAIN | | If ATC is used |

## 12.3 FMGS / MCDU – Data Insertion

**COCKPIT PREPARATION – FMGS/MCDU DATA INSERTION**

| NO. | PANEL | | | ACTION | | REMARK |
|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 50 | MCDU | INIT 1 | | DEP and DEST AIRPORT | ENTER | LOWI/LFMN |
| 51 | MCDU | INIT 1 | | ALIGN IRS | PRESS | |
| 52 | MCDU | INIT 1 | | FLT NBR (Flight Number) | ENTER | Par example =LH319 |
| 53 | MCDU | INIT 1 | | COST INDEX | ENTER | 40 |
| 54 | MCDU | INIT 1 | | CRZ FL (Cruise Flight Level) | ENTER | =310 (31.000 feet) |
| 55 | MCDU | F-PLAN | | FLIGHTPLAN | ENTER | Speeds and altitudes are now calculated |
| 56 | MCDU | RAD NAV | | ENTER ADF1 FREQUENCY | ENTER | RTT |
| 57 | MCDU | INIT 2 | | BLOCK | ENTER | 6.8 |
| 58 | MCDU | INIT 2 | | ZFWCG/ZFW | CHECK | 25.0/49.5 – speeds and altitude are calculated |
| 59 | MCDU | PERF-TO | | FLAPS / THS | ENTER | 2/ |
| 60 | MCDU | PERF-TO | | FLEX TO TEMP | CHECK | |
| 61 | MCDU | PERF-TO | | V1, VR and V2 | CHECK | 89/120/124 |
| 62 | MCDU | PERF-CLIMB | | DATA | CHECK | |
| 63 | MCDU | PERF-CZR | | DATA | CHECK | |
| 64 | MCDU | PERF-DES/APPR | | DATA | CHECK | |
| 65 | MCDU | PERF-GO ARD | | DATA | CHECK | |

## 12.4 Cockpit Preparation – Part 2

**COCKPIT PREPARATION – Part 2**

| NO. | PANEL | | | ACTION | | REMARK |
|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 66 | EFIS | FD / ILS | 3 | Button: LS | OFF | |
| 67 | EFIS | ND MOD/RGE | 5 & 6 | ND mode and range | SET | Mode: ARC / Range 10 |
| 68 | EFIS | ADF/VOR | 7 | VOR / ADF select | AS REQUIRED | |
| 69 | FCU | ALTITUDE | 3 | First Altitude | SET TO 12.000 Feet | >than THR RED altitude |
| 70 | FCU | FCU | 1 to 4 | DASH-BALL-DASH-BALL-ALT-BALL-DASH | CHECK | |
| 71 | ECAM | ECAM | 1 | STATUS | CHECK | |
| 72 | PEDESTAL | RADIO | 1 | ATC - FREQUNCY | SET | If ATC is used |
| 73 | PEDESTAL | RADIO | 1 | ATC CLEARANCE | OBTAIN | If ATC is used |
| 74 | GLARESHIELD | ND-DISPL. | 2 | IRS ALIGN | CHECK | |
| 75 | MCDU | F-PLAN | | F-PLAN PAGE | SET | |

## 12.5 Before Pushback and Start

**BEFORE PUSHBACK OR START**

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 76 | MCDUw | MAIN MENU | ACFT DOORS | CLOSE ALL DOORS | PUSH | | Start Checklist / Co-Pilot - if selected |
| 77 | MCDU R | MAIN MENU | ACFT DOORS | ALL WINDOWS AND DOORS CLOSED | CHECK | CoP | |
| 78 | OVERHEAD | APU | 10 | APU MASTER and START | ON | CoP | START= available 10 sec after MASTER |
| 79 | OVERHEAD | APU | 10 | APU BLEED = ON | ON | CoP | |
| 80 | MCDU | ELEC | 6 | EXT PWR | OFF | CoP | |
| 81 | OVERHEAD | SIGNS | 12 | SEAT BELT SIGNS / NO SMOKING = ON | ON | CoP | For Seat Belts also AUTO is OK |
| 82 | PEDESTAL | THR LEVER | 4 | LEVERS | CHECK IDLE | | |
| 83 | PEDESTAL | P. BRAKE | 7 | PARKING BRAKE | SET to ON | CoP | FSX: CTRL + . (period) |
| 84 | MCDU2 | MAIN MENU | GND SERV. | TRAFFIC CONES | REMOVE | CoP | |
| 85 | MCDU2 | MAIN MENU | GND SERV. | WHEEL CHOCKS | REMOVE | CoP | |
| 86 | EFIS | AP SETTING | 2 | BARO REF | SET / X CHECK (Read out) | CoP | |
| 87 | OVERHEAD | EXT. LIGHTS | 9 | BEACON | ON | CoP | Checklist complete |

## 12.6 Engine Start

### 12.6.1 Engine Start with Pushback

| ENGINE START – with pushback | | | | | | |
|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 88 | MCDU | MAIN MENU | CHECKLIST | SELECT: "START WITH PUSH" = LSK5L | | **Starts next Checklist / Co-Pilot - if selected** |
| 89 | MCDU right | | | SELECT TAXIWAX DIST and PB DIRECTION | SET | |
| 90 | MCDU right | | | START PUSHBACK | START | |
| 91 | | | | „Flight Deck to Ground" | | GROUND: „Go ahead" |
| 92 | | | | „We have ATC clearance" | | GROUND: „Roger" |
| 93 | | | | „Confirm ground equipment = clear" | | GROUND: "Clear" |
| 94 | | | | "Starting pushback" | | GROUND: "Roger" |
| 95 | PEDESTAL | P. BRAKE | 7 | PARKING BRAKE = OFF | SET to OFF | FSX: . (period) |
| 96 | | | | | | GROUND: "OK. Starting Pushback" |
| 97 | PEDESTAL | ENGINE | 5 | ENG MODE SEL | IGN START | |
| 98 | PEDESTAL | ENGINE | 5 | MASTER SW 2 | ON | |
| 99 | MAIN PANEL | E/WD | 5a | No. 2 RUNNING UP | CHECK | |
| 100 | PEDESTAL | ENGINE | 5 | MASTER SW 1 | ON | Engine 2 N1 > 20% |
| 101 | MAIN PANEL | E/WD | 5a | No. 1 RUNNING UP | CHECK | |
| 102 | | | | When in Position: Stop Pushback | STOP (SHIFT + P) | |
| 103 | | | | | | GROUND: „Pushback complete" |
| 104 | PEDESTAL | P. BRAKE | 7 | PARKING BRAKE | ON | FSX: CRTL +.(period) |
| 105 | | | | | | GROUND: "Have a good flight" – **CL complete** |

### 12.6.2 Engine Start without Pushback

| ENGINE START | | | | | | |
|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 106 | MCDU | MAIN MENU | CHECKLIST | SELECT: "START" = LSK6L | | **Starts next Checklist / Co-Pilot - if selected** |
| 107 | | | | „Flight Deck to Ground" | | GROUND: „Go ahead" |
| 108 | | | | „We have ATC clearance" | | GROUND: „Roger" |
| 109 | | | | „Confirm ground equipment = clear" | | GROUND: "Clear" |
| 110 | | | | „Starting engines" | | GROUND: „Roger" |
| 111 | PEDESTAL | ENGINE | 5 | ENG MODE SEL | IGN START | |
| 112 | PEDESTAL | ENGINE | 5 | MASTER SW 2 | ON | |
| 113 | MAIN PANEL | E/WD | 5a | No. 2 RUNNING UP | CHECK | |
| 114 | PEDESTAL | ENGINE | 5 | MASTER SW 1 | ON | Engine 2 N1 > 20% |
| 115 | MAIN PANEL | E/WD | 5a | No. 1 RUNNING UP | CHECK | |
| 116 | | | | "Both Engines running" | | GROUND: „Roger" |
| 117 | | | | | | GROUND: "Have a good flight" – **CL complete** |

## 12.7 After Engine Start

| AFTER ENGINE START | | | | | | | |
|---|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 118 | | | | ENGINE 1 & 2 are running for 15 sec | | | **Start Checklist / Co-Pilot - if selected** |
| 119 | PEDESTAL | ENGINE | 5 | ENG MODE SEL | NORM | CoP | |
| 120 | OVERHEAD | APU | 10 | APU BLEED | OFF | CoP | |
| 121 | OVERHEAD | APU | 10 | APU MASTER SW | OFF | CoP | |
| 122 | PEDESTAL | SPEED-BR. | 6 | GROUND SPOILERS | ARM | CoP | Mouse click: right |
| 123 | PEDESTAL | RUDDER | 4 | RUDDER TRIM | SET to 0 degree | CoP | |
| 124 | PEDESTAL | PITCH | 4 | PITCH TRIM | SET to THS Value | | |
| 125 | | | | AILERON, ELEVATOR and RUDDER | **CHECK ALL 6 POSITIONS** | | |
| 126 | PEDESTAL | FLAPS | 8 | FLAPS | SET to 2 | CoP | FSX: F7 |
| 127 | OVERHEAD | ANTI-ICE | 8 | ENG ANTI ICE (1 &2) | ON / OFF | | |
| 128 | OVERHEAD | ANTI-ICE | 8 | WING ANTI ICE | ON / OFF | | |
| 129 | ECAM | ECAM | 1 | ECAM STATUS | CHECK | | |
| 130 | ECAM | ECAM | 1 | ECAM DOOR PAGE | CHECK | CoP | |
| 131 | | | | HAND SIGNAL RECEIVED | | | **Checklist complete** |

## 12.8 TAXI

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 132 | PEDESTAL | RADIO | 1 | TAXI CLEARENCE | OBTAINED | | If ATC is used |
| 133 | PEDESTAL | P. BRAKE | 7 | PARKING BRAKE | OFF | | FSX: . (period) |
| 134 | | | | GS> 10 Knots | | | Start Checklist / Co-Pilot - if selected |
| 135 | OVERHEAD | EXT. LIGHTS | 9 | NOSE LIGHT | TAXI | CoP | |
| 136 | PEDESTAL | THR LEVER | 4 | LEVERS | AS REQUIRED | | |
| 137 | | | | PRESS BRAKES to listen for PM CALL | PRESS PEDAL / RELEASE | | |
| 138 | MAIN PANEL | AUTO BRAKE | 6 | SET TO | MAX | CoP | |
| 139 | MCDU | | | TAKEOFF DATA | REVIEW | CoP | |
| 140 | FCU | HDG / ALT | 2 & 3 | FCU  HDG/ALT = DASH-BALL-DASH-BALL | SET or CHECK | | IF ALT NOT SET CoP sets it to 7000ft |
| 141 | | | | ALL DISPLAYS ARE ON | CHECK | | |
| 142 | ECAM | PANEL | 5 | TO CONFIG | PRESS | CoP | |
| 143 | MAIN PANEL | E/WD | 5a | TO MEMO | CHECK NO BLUE | CoP | |
| 144 | PEDESTAL | WXR | 11 | SET system to 1 (ON) and knob to WX-T | SET | CoP | Checklist complete |
| 145 | EFIS | FD / ILS | 3 | FD | CHECK ON | | |
| 146 | PEDESTAL | TRANSPOND. | 9 | ATC CODE | CONFIRM / SET | | If ATC is used |

## 12.9 Before Takeoff

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 147 | | | | INFORMATION TO CABIN CREW | | | "Please prepare for Takeoff" |
| 148 | OVERHEAD | EXT. LIGHTS | 9 | TAXI TO RUNWAY HOLDING POINT | | | Start Checklist / Co-Pilot please see below |
| 149 | ECAM | WHEEL PAGE | 1 | BRAKE TEMP = below 150 | CHECK | Cop | CoP set Brake Fans On if Brake Temp > 150 |
| 150 | MAIN PANEL | BRAKE FAN | 11 | BRAKE FANS | OFF | Cop | |
| 151 | PEDESTAL | ENGINE | 5 | ENG MODE SEL = NORMAL | CHECK | | |
| 152 | PEDESTAL | TCAS | 10 | TCAS TA/RA plus TILT ABOVE | SET | CoP | |
| 153 | OVERHEAD | EXT. LIGHTS | 9 | EXT. LIGHTS | SET | CoP | Strobes, Land. and Nose Lights |
| 154 | | | | PF SLIDING TABLE | STOWED | Cop | Checklist complete |
| 155 | PEDESTAL | WXR | 11 | TILT: UP and select 4 degrees up | SET | | |
| 156 | MAIN PANEL | N/SKID NW | 10 | A/SKID & NW STRG | CHECK = ON | | |
| 157 | PEDESTAL | RADIO | 1 | TAKEOFF / LINE UP CLEAR | OBTAIN | | If ATC is used |
| 158 | PEDESTAL | RADIO | 1 | ATC (if no AUTO position) | ON | | If ATC is used |

## 12.10 Takeoff (Part 1)

| NO | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 158 | PEDESTAL | THR LEVER | 4 | SET LEVERS TO | MAN TOGA | | |
| 159 | GLARESHIELD | CHRONO | 7 | CHRONO | START | CoP | Push upper right button |

## 12.11 Takeoff Abort

| PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|
| TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 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** | | | | | | |

## 12.12 Takeoff (Part 2)

| TAKEOFF – Part 2 | | | | | | |
|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 160 | | | | Takeoff thrust is set | | Start Checklist / Co-Pilot - if selected |
| 161 | | | | "Takeoff" | | |
| 162 | | | | "MAN" „TOGA" and „SRS" | „ Power set" | |
| 163 | | | | | "100 Knots" | At 100 |
| 164 | | | | "Checked" | | |
| 165 | | | | | "V1" | At GS = V1 |
| 166 | | | | | "Rotate" | At GS = VR |
| 167 | | | | | "Positive climb" | Radio Alt >50 ft, VS > 100 ft/min |
| 168 | MAIN PANEL | GEAR | 7 | "Gear up" | GEAR UP   CoP | FSX: G |
| 169 | PEDESTAL | SPEED-BR. | 6 | GROUND SPOILERS | DISARM   CoP | FSX: / |
| 170 | MAIN PANEL | GEAR | 7 | GEAR STOWED | "Gear is up , lights off" | Radio Alt >50 ft, VS > 100 ft/min |
| 171 | | | | At Thrust Red. / Acceleration Alt. | | |
| 172 | PEDESTAL | THR LEVER | 4 | SET LEVERS TO | "CLIMB THRUST" | Blinking announcement in FMA |
| 173 | FCU | AP | 5 | AUTOPILOT | "AUTOPILOT ON" | |
| 174 | | | | At "Green Dot Speed" / "S-Speed" | | |
| 175 | PEDESTAL | FLAPS | 8 | "Flaps zero" | SELECT   CoP | FSX: F6 |
| 176 | | | | | "Flaps zero" | Checklist complete |
| 177 | FCU | ALTITUDE | 3 | Cruise Altitude | SET TO 31.000 feet | |

## 12.13 After Takeoff

| TAKEOFF – Part 2 | | | | | | |
|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |
| 178 | PEDESTAL | WXR | 11 | TILT: DOWN | SET | |
| 179 | EFIS | INFOR. | 4 | EFIS OPTION | ARPT | |
| 180 | PEDESTAL | RADIO | 1 | RADIO NAV | CHECK | |
| 181 | PEDESTAL | ECAM | 1 | ECAM MENU | REVIEW | |
| 182 | MCDU | PROG | | OPT / MAX ALTITUDE | CHECK | |
| 183 | | | | FLAPS UP and RETRACTED | | Start Checklist / Co-Pilot - if selected |
| 184 | PEDESTAL | ENGINE | 5 | ENG MODE SEL = NORMAL | CHECK   Cop | |
| 185 | PEDESTAL | SPEED-BR. | 6 | GROUND SPOILERS | DISARMED   CoP | FSX: / |
| 186 | PEDESTAL | FLAPS | 8 | FLAPS UP and RETRACTED | CHECK   CoP | FSX: F6 |
| 187 | ECAM | GEAR | 2 | GEAR IS UP and STOWED | „Gear is up, Lights off"   CoP | |
| 188 | OVERHEAD | EXT. LIGHTS | 9 | RUNWAY / NOSE = OFF | OFF   CoP | |
| 189 | OVERHEAD | AIR COND | 7 | 1 st and 2ND PACK are ON | CHECK   Cop | |
| 190 | OVERHEAD | ANTI-ICE | 8 | ANTI ICE (1 &2) | AS REQUIRED | =OFF |
| 191 | PEDESTAL | TCAS | 10 | TCAS = TA/RA and TILT = ABV or N | CHECK and set to ABV | |
| 192 | EFIS | A PRESSURE | 2 | BARO REF | X-CHECK (Read out) | Checklist complete |

## 12.14 Climb

| CLIMB | | | | | | |
|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 193 | | | | CLIMB CHECKLIST | | Start Checklist / Co-Pilot - if selected |
| 194 | | | | At 10.000 feet | | |
| 195 | | | | | "Passing 10.000" | |
| 196 | OVERHEAD | EXT. LIGHTS | 9 | LANDING LIGHTS | LIGHTS OFF   CoP | |
| 197 | FCU | ALTITUDE | 3 | Cruise Altitude | CHECK | =31.000 feet |
| 198 | | | | At Transition Altitude | | = Checklist completed |
| 199 | GL.SH./EFIS | A PRESSURE | 13 / 2 | BARO REF to STD | SET / X CHECK   CoP | |

## 12.15 Cruise

| CRUISE | | | | | | |
|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 200 | | | | FMA "ALT / ALT CRZ" | | Start Checklist / Co-Pilot - if selected |
| 201 | PEDESTAL | TCAS | 10 | TCAS TA or TA/RA plus TILT NORMAL | SET   CoP | |
| 202 | OVERHEAD | SIGNS | 11 | SEAT BELTS = OFF or AUTO | CHECK and set to OFF   CoP | |
| 203 | | | | SLIDING TABLE - COPILOT | EXTENDED   CoP | Procedure complete |
| 204 | PEDESTAL | ECAM | 1 | ECAM MEMO / SYS PAGES | REVIEW | |
| 205 | MCDU | Var.PAGES | | FLIGHT PROGRESS | CHECK | |
| 206 | MCDU | FUEL PRED | | FUEL | MONITOR | |
| 207 | MCDU | PROG | | NAV ACCURANCY | CHECK | |
| 208 | OVERHEAD | AIR COND | 7 | CABIN TEMP | MONITOR | |

## 12.16 MCDU PERF APPR page

| MCDU PERF APPR PAGE | | | | | | |
|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | |
| 209 | MCDU | PERF | APPR | QNH, TEMP, MAG WIND | ENTER DATA | |
| 210 | MCDU | PERF | APPR | TRANS ALT | ENTER DATA | = 5000 |
| 211 | MCDU | PERF | APPR | BARO / RADIO | ENTER DATA | = BARO 210 |
| 212 | MCDU | PERF | APPR | VAPP | CHECK | |
| 213 | MCDU | PERF | APPR | LDG CONF | CHECK | |

## 12.17 Descent Preparation

| DESCENT PREPARATION | | | | | | | |
|---|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 214 | | | | 1 min after CRZ level has been reached | | | Start Checklist / Co-Pilot - if selected |
| 215 | | | | SEAT BELTS = ON or AUTO | CHECK and set to ON | Cop | |
| 216 | OVERHEAD | ANTI-ICE | 8 | ANTI ICE = OFF | CHECK | | |
| 217 | PEDESTAL | RADIO | 1 | LANDING INFORMATION | RECEIVED | | If ATC is used |
| 218 | EFIS | A.PRESSURE | 2 | BARO REF = STANDARD | CHECK | Cop | |
| 219 | MCDU | PERF. | APPR | AIR PRESSURE ARRIVAL AIRPORT | "Checked" and readout | Cop | QNH= 1013 |
| 220 | MCDU | PERF. | APPR | DECISION ALTITUDE | "Checked" | Cop | BARO = 210 |
| 221 | MCDU | PERF. | APPR | LDG CONF (Flaps) | "Checked" | CoP | Checklist complete |

## 12.18 Descent

| DESCENT | | | | | | | |
|---|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 222 | FCU | ALT | 3 | INSERT NEW HEIGHT | INSERT | | = 4.000 |
| 223 | FCU | ALT | 3 | INITIATE DESCENT | PUSH KNOB | | |
| 224 | MAIN PANEL | PFD | 1 | DESCENT | MONITOR | | |
| 225 | PEDESTAL | SP BRAKES | 6 | SET | AS REQUIRED | | |
| 226 | | | | Vert. Mode = DES / Desc.Prep.CL = compl. | | | Starts next Checklist / Co-Pilot - if selected |
| 227 | MAIN PANEL | PFD | 1 | FMA | CHECK | | |
| 228 | PEDESTAL | TCAS | 10 | TCAS = TILT BELOW | CHECK and SET | CoP | |
| 229 | | | | At 10.000 feet: | | | |
| 230 | OVERHEAD | EXT. LIGHTS | 9 | LANDING LIGHTS | ON | CoP | |
| 231 | EFIS | FD / ILS | 3 | ILS LOCALIZER (LS) | PUSH | CoP | EFIS |
| 232 | | | | At Transition Altitude | | | = 5000 |
| 233 | EFIS | A PRESSURE | 2 | BARO REF to actual pressure value | SET / X CHECK | CoP | Checklist complete |

## 12.19 Approach

| APPROACH | | | | | | | |
|---|---|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | | **REMARK** |
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 234 | | | | 5 NM before DECEL pseudo waypoint | | | Starts next Checklist / Co-Pilot - if selected |
| 235 | ECAM | ECAM | 1 | ECAM MESSAGE | CHECK | | |
| 236 | | | | SLIDING TABLE S - STOWED | STOWED | CoP | |
| 237 | OVERHEAD | SIGNS | 11 | CABIN SIGNS = ON | CHECK or set to ON | | |
| 238 | MCDU | PROG | | NAV ACCURACY | CHECK | | |
| 239 | EFIS | A.PRESSURE | 2 | BARO REF CROSS CHECK | SET and Read out | CoP | Checklist complete |
| 240 | | | | Initial approach: | | | |
| 241 | OVERHEAD | SIGNS | 11 | SEAT BELTS | CHECK ON | | AUTO is also OK |
| 242 | PEDESTAL | ENGINE | 5 | ENG MODE | CHECK NORM | | |
| 243 | | | | Approx. 15 NM from touchdown: | | | |
| 244 | MCDU | PROG | | NAV ACCURACY | MONITOR | | |
| 245 | MAIN PANEL | PFD | 1 | POSITIONING | MONITOR | | |

## 12.20 Final

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 246 | | | | Appr. CL has been completed | | | Starts next Checklist / Co-Pilot - if selected |
| 247 | MCDU | PERF | | APPR PHASE | ACTIVATE | CoP | |
| 248 | MAIN PANEL | PFD | 1 | CALL: LOCALIZER ALIVE | | CoP | |
| 249 | FCU | APPR | 6 | APPR | PUSH | | |
| 250 | MAIN PANEL | PFD | 1 | LOCALIZER CAPTURED | CHECK | 241 | MAIN PANEL |
| 251 | | | | Green Dot Speed | | | |
| 252 | PEDESTAL | FLAPS | 8 | FLAPS 1 | SELECT | CoP | FSX: F7 |
| 253 | | | | S-Speed | | | |
| 254 | PEDESTAL | FLAPS | 8 | FLAP 2 | SET | | FSX: F7    OPTIONAL |
| 255 | | | | Gkidescope becomes alive | | | |
| 256 | FCU | AP | 5 | SECOND AP | ON | | |
| 257 | | | | Glidescope captured | | | |
| 258 | MAIN PANEL | PFD | 1 | G/S CAPTURE | CHECK | | |
| 259 | | | | Rad. Alt. > 2.000 ft = LANDING MEMO | | | |
| 260 | MAIN PANEL | EWD | 5 | LANDING MEMO | CHECK NO BLUE | | |
| 261 | PEDESTAL | FLAPS | 8 | FLAPS 2 | SELECT | CoP | FSX: F7 |
| 262 | FCU | ALT | 4 | GO AROUND ALT | SET TO 2.000 FEET | CoP | Just enter - do **not** push knob |
| 263 | MAIN PANEL | GEAR | 7 | L/G DOWN | SELECT | CoP | FSX: G |
| 264 | PEDESTAL | SPEED-BR. | 6 | GROUND SPOILERS | ARM | CoP | Mouse click: right |
| 265 | OVERHEAD | EXT. LIGHTS | 9 | NOSE LIGHT (if not TAXI) = TO | ON | CoP | |
| 266 | | | | When L/G down, below REF SPEED | | | |
| 267 | PEDESTAL | FLAPS | 8 | FLAPS 3 | SELECT | CoP | FSX: F7 |
| 268 | | | | Next REF SPEED: | | | |
| 269 | PEDESTAL | FLAPS | 8 | FLAPS FULL | SELECT | CoP | FSX: F7 / Checklist complete |
| 270 | FCU | SPD | 1 | Set speed to VApp | SET | | = 126 (MCDU – PERF – APPR page) |
| 271 | PEDESTAL | TCAS | 10 | TCAS | SET TO „TA ONLY" | | |
| 272 | MAIN PANEL | PFD | 1 | FMA | CHECK | | |
| 273 | MAIN PANEL | PFD | 1 | LOC CAPTURE | MONITOR | | |
| 274 | ECAM | ECAM | 1 | ECAM WHEEL PAGE | CHECK | | |
| 275 | FCU | ATHR | 7 | A/THR | CHECK SPD | | |
| 276 | OVERHEAD | ANTI-ICE | 8 | WING ANTI ICE | CHECK OFF | | |

## 12.21 Landing

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 277 | | | | Flaps in Landing Config. (MCDU Settings) | | | Start next Checklist / Co-Pilot - if selected |
| 278 | MAIN PANEL | GEAR | 7 | LAND. GEAR = FULL EXTRACTED | CHECK | CoP | |
| 279 | PEDESTAL | SP. BRAKEs | 6 | GROUND SPOILERS = ARMED | CHECK | CoP | FSX: Right mouse click |
| 280 | MAIN PANEL | AUTO BRAKE | 6 | AUTO BRAKES = MEDIUM | SET | CoP | |
| 281 | OVERHEAD | EXT. LIGHTS | 9 | NOSE = TO or TAXI / LANDING L. = ON | CHECK | CoP | |
| 282 | FCU | ALT | 3 | GO AROUND ALT | CHECK | CoP | |
| 283 | | | | AT DECISION ALTITUDE | | | |
| 284 | FCU | AP | 5 | AP | OFF | CoP | FSX: Z |
| 285 | | | | At 20 feet: | | | |
| 286 | | | | FLARE | PERFORM | | |
| 287 | MAIN PANEL | PDF | 1 | ALTITUDE | MONITOR | | |
| 288 | PEDESTAL | THR LEVER | 4 | THRUST LEVERS | IDLE | | FSX: F1 |
| 289 | | | | At touchdown: | | | |
| 290 | PEDESTAL | THR LEVER | 4 | REV | MAX | | FSX: F2 |
| 291 | | | | BRAKES | AS REQUIRED | | |
| 292 | | | | At 70 knots: | | | |
| 293 | PEDESTAL | THR LEVER | 4 | REV | IDLE | | FSX: F1 |
| 294 | | | | At taxi speed: | | | |
| 295 | PEDESTAL | THR LEVER | 4 | REV | STOW | CoP | |
| 296 | | | | Before 30 knots: | | | |
| 297 | MAIN PANEL | AUTO BRAKE | 6 | AUTOBRK | DISENGAGE | CoP | Checklist complete |
| 298 | FCU | AP | 5 | AP (if applicable) | OFF | CoP | FSX: Z |

## 12.22 Go Around

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| A | PEDESTAL | THR LEVER | 4 | GA thrust is set | SET | | Start Checklist / Co-Pilot - if selected |
| B | PEDESTAL | FLAPS | 8 | "GO AROUND FLAPS" | FLAPS ONE STEP BACK = 3 | CoP | FSX: F6 |
| C | | | | | "Positive climb" | | Radio Alt >50 ft, VS > 100 ft/min |
| D | MAIN PANEL | GEAR | 7 | "Gear up" | GEAR UP | CoP | FSX: G |
| E | MAIN PANEL | GEAR | 7 | GEAR STOWED | "Gear up , Flaps 3" | | |
| F | PEDESTAL | SPEED-BR. | 6 | GROUND SPOILERS | DISARM | CoP | FSX: / |
| G | OVERHEAD | EXT. LIGHTS | 9 | RUNWAY / NOSE = OFF | „Off" | CoP | |
| H | MAIN PANEL | BRAKES | 6 | AUTOBRAKES | „Off" | CoP | |
| I | | | | At Thrust Red. / Acceleration Alt. | | | |
| J | PEDESTAL | FLAPS | 8 | "Flaps 1" | SELECT | CoP | FSX: F6 |
| K | PEDESTAL | THR LEVER | 4 | SET LEVERS TO | "CLIMB THRUST" | | Blinking announcement in FMA |
| L | FCU | AP | 5 | AUTOPILOT | ON | | |
| M | | | | At "Green Dot Speed" / "S-Speed" | | | |
| N | PEDESTAL | FLAPS | 8 | "Flaps up" | SELECT | CoP | FSX: F6 |
| O | | | | | "Flaps up" | | Checklist complete |
| P | FCU | AP | 5 | AUTOPILOT 2 | „Off" | CoP | |

## 12.23 After Landing

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 299 | | | | Ground Speed >35 / Dir. to runway > 15 ° | | | Start Checklist / Co-Pilot - if selected |
| 300 | GLARESHIELD | CHRONO | 7 | CHRONO | STOP | | Push upper right button |
| 301 | OVERHEAD | EXT. LIGHTS | 9 | NOSE LIGHTS | ON | CoP | |
| 302 | OVERHEAD | EXT. LIGHTS | 9 | LANDING LIGHTS | OFF | CoP | |
| 303 | OVERHEAD | EXT. LIGHTS | 9 | STROBE LIGHT = OFF or AUTO | If ON = OFF | CoP | |
| 304 | PEDESTAL | TCAS | 10 | TCAS MODE SEL | STBY | CoP | |
| 305 | PEDESTAL | FLAPS | 8 | FLAPS | RETRACT | CoP | FSX: F6 |
| 306 | PEDESTAL | ENGINE | 5 | ENG MODE SEL | NORM | Cop | |
| 307 | PEDESTAL | WXR | 11 | WXR: SET system to OFF | SET | Cop | |
| 308 | EFIS | FD / ILS | 3 | ILS LOCALIZER (LS) | OFF | CoP | EFIS |
| 309 | OVERHEAD | APU | 10 | APU MASTER and APU START | ON | | |
| 310 | PEDESTAL | SP.BRAKES | 6 | GRND SPLRS | DISARM | CoP | FSX: / |
| 311 | ECAM | WHEEL PAGE | 1 | BRAKE TEMP all wheels = > 300 degrees | CHECK | | Checklist complete |

## 12.24 Parking

| NO. | PANEL | | | ACTION | | | REMARK |
|---|---|---|---|---|---|---|---|
| | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | | |
| 312 | PEDESTAL | RADIO | 1 | ATC (if no AUTO position) | STBY / OFF | | |
| 313 | OVERHEAD | ANTI-ICE | 8 | ANTI ICE (WING and ENGINES 1&2) | CHECK = OFF | | |
| 314 | PEDESTAL | RADIO | 1 | GROUND CONTACT | ESTABLISH | | If ATC is used |
| 315 | PEDESTAL | P.BRAKE | 7 | PARKING BRAKE ON | SET ON | | FSX: CTRL + . (period) |
| 316 | PEDESTAL | ENGINE | 5 | ENG MASTER 1 & 2 | OFF | | Start Checklist / Co-Pilot - if selected |
| 317 | MCDU R | GRND SERV | | CHOCKS | SET | CoP | |
| 318 | PEDESTAL | P.BRAKE | 7 | PARKING BRAKE | OFF | CoP | FSX: . (period) |
| 319 | OVERHEAD | SIGNS | 11 | SEAT BELTS | OFF | CoP | |
| 320 | OVERHEAD | EXT. LIGHTS | 9 | BEACON LIGHT | OFF | CoP | |
| 321 | OVERHEAD | EXT. LIGHTS | 9 | TAXI LIGHT. | OFF | CoP | |
| 322 | OVERHEAD | ANTI-ICE | 8 | WING & ENGINE ANTI ICE = OFF | CHECK | Cop | |
| 323 | OVERHEAD | FUEL | 2 | FUEL PUMPS | OFF | CoP | OFF should appear / Checklist complete |
| 324 | MCDU R | GRND SERV | | CONES | SET | | |
| 325 | MCDU R | GRND SERV | | ESTABLISH EXTERNAL POWER | CONNECT | | |
| 326 | OVERHEAD | EXT POWER | 6 | EXT. POWER = AVAILABLE | SET TO ON | | |
| 327 | OVERHEAD | APU | 10 | APU MASTER | SET TO OFF | | |
| 328 | MCDU | MENU | ACFT DOORS | DOORS | OPEN (AS REQUIRED) | | |

## 12.25 Securing Aircraft

| SECURING AIRCRAFT | | | | | |
|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |

| NO. | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | REMARK |
|---|---|---|---|---|---|---|
| 329 | OVERHEAD | ADIRS | | ADIRS (1 + 2 + 3) | OFF | |
| 330 | OVERHEAD | EXT. LIGHTS | 9 | NAV. LIGHTS | OFF | |
| 331 | OVERHEAD | SIGNS | 11 | NO SMOKING & EMERGENCY LIGHT | OFF | |
| 332 | MCDU | MENU | ACFT DOORS | DOORS | CLOSE (AS REQUIRED) | |
| 333 | OVERHEAD | EXT. PWR | 6 | EXT PWR | AS REQUIRED | |
| 334 | OVERHEAD | ELEC | 5 | GEN 1 + 2 (Electric Generators) | PRESS | OFF should appear |
| 335 | PEDESTAL | INT. LIGHT | 3 | INTEG LT | OFF | |
| 336 | MAIN PANEL | PFD LIGHT | 8 | SWITCH | OFF | |
| 337 | MAIN PANEL | ND LIGHT | 8 | SWITCH | OFF | |
| 338 | ECAM | DIMMER | 4 | SWITCH UPPER and LOWER | OFF | |
| 339 | PEDESTAL | RADIO | 1 | RADIO CONTROL PANEL | OFF | |
| 340 | PEDESTAL | TCAS | 10 | TCAS = STBY | SET | |
| 341 | OVERHEAD | BATTERIES | 4 | BAT 1 + 2 | OFF | |

## 12.25 Securing Aircraft

| SECURING AIRCRAFT | | | | | |
|---|---|---|---|---|---|
| **NO.** | **PANEL** | | | **ACTION** | | **REMARK** |

| NO. | TYP | PART (Name) | PART (No.) | PF (PILOT FLYING) | PM (PILOT MONITORING) | REMARK |
|---|---|---|---|---|---|---|
| 329 | OVERHEAD | ADIRS | | ADIRS (1 + 2 + 3) | OFF | |
| 330 | OVERHEAD | EXT. LIGHTS | 9 | NAV. LIGHTS | OFF | |
| 331 | OVERHEAD | SIGNS | 11 | NO SMOKING & EMERGENCY LIGHT | OFF | |